

**SOLICITATION, OFFER,  
AND AWARD**  
(Construction, Alteration, or Repair)

1. SOLICITATION NUMBER

DACA67-00-R-0001

2. TYPE OF SOLICITATION

☐ SEALED BID (RFB)  
☒ NEGOTIATED (RFP)

3. DATE ISSUED

19 Nov 99

PAGE OF PAGES

1

**IMPORTANT** - The "offer" section on the reverse must be fully completed by the offeror.

4. CT NUMBER

DACA67-00-C-0214

5. REQUISITION/PURCHASE REQUEST NUMBER

W68MD9-9217-5295

6. PROJECT NUMBER

7. ISSUED BY

CODE

W68MD9

8. ADDRESS OFFER TO

Seattle District, Corps of Engineers  
ATTN: CENWS-CT-CB  
PO Box 3755  
Seattle, WA 98124-3755

Seattle District, Corps of Engineers  
PO Box 3755 ATTN: CENWS-CT-CB  
Seattle, WA 98124-3755

HAND CARRY: Preston Conference Room  
4735 East Marginal Way South  
Seattle, WA 98134-2385  
BID OPENING ROOM: Preston Conference Room

9. FOR INFORMATION CALL

A. NAME

See Information Page inside Front Cover

B. TELEPHONE NUMBER (Include area code) (NO COLLECT CALLS)

See Information Page inside Front Cover

**SOLICITATION**

**NOTE:** In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder".

10. THE GOVERNMENT REQUIRES PERFORMANCE OF THE WORK DESCRIBED IN THESE DOCUMENTS (Title, identifying number, date):

Furnish all labor, materials and equipment and perform all work for Design-Build: ETI Phase II, Mountain Home AFB, ID in accordance with the attached Contract Clauses, Special Clauses, Technical Specifications and Drawings.

1. Solicitation No. DACA67-00-R-0001 dated 19 Nov 99 with 6 amendments thereto.
2. Wage Determination No. ID990001 with 1 modification and Wage Determination No. ID000004 with 0 modifications thereto.
3. Drawings as listed in Section 00800.
4. See page 00010-2(a) for Alterations to the Contract.

**NOTE:** Award will be made pursuant to the Small Business Competitive Demonstration Program.

11. The Contractor shall begin performance within 10 calendar days and complete it within \_\_\_\_\_ calendar days after receiving

☐ award, ☒ notice to proceed. This performance period is ☒ mandatory, ☐ negotiable. (See \* Paragraph SC-1)

12A. THE CONTRACTOR MUST FURNISH ANY REQUIRED PERFORMANCE PAYMENT BONDS?

(If "YES," indicate within how many calendar days after award in Item 12B.)

☒ YES ☐ NO

12B. CALENDAR DAYS

10

13. ADDITIONAL SOLICITATION REQUIREMENTS:

A. Sealed offers in original and See Section 00100 copies to perform the work required are due at the place specified in Item 8 by 3:00 P.M. (hour) local time 5 Jan 2000 (date). If this is a sealed bid solicitation, offers will be publicly opened at that time. Sealed envelopes containing offers shall be marked to show the offeror's name and address, the solicitation number, and the date and time offers are due.

B. An offer guarantee ☒ is, ☐ is not required.

C. Offers are subject to the (1) work requirements, and (2) other provisions and clauses incorporated in the solicitation in full text or by reference.

D. Offers providing less than 90 calendar days for Government acceptance after the date offers are due will not be considered and will be rejected.

SLC: DACA67-00-R-0001 OFFER (Must be fully completed by offeror) Contract: DACA67-00-C-0214  
1. NAME AND ADDRESS OF OFFEROR (Include ZIP Code) CCI/RSCI A Joint Venture  
1854 E. Lanark St.  
Meridian, ID 83642  
2. ID No: 82-0421355 DUNS No: 11-496-5739  
eMail: susan@rscigroup.com  
3. DOE FACILITY CODE 1NRE9

7. The offeror agrees to perform the work required at the prices specified below in strict accordance with the terms of this solicitation, if this offer is accepted by the Government in writing within 90 calendar days after the date offers are due. (Insert any number equal or greater than the minimum requirement stated in 13D. Failure to insert any number means the offeror accepts the minimum in Item 13D.)

1. MOUNTS See page 00010-5

18. The offeror agrees to furnish any required performance and payment bonds.

19. ACKNOWLEDGEMENT OF AMENDMENTS  
(The offeror acknowledges receipt of amendments to the solicitation - give number and date of each)

AMENDMENT NO.	0001	0002	0003	0004	0005	0006				
DATE	09DEC99	17DEC99	22DEC99	03JAN00	03FEB00	11FEB00				

20A. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER (Type or print) Susan T. Record, Director  
20B. SIGNATURE [Signature]  
20C. OFFER DATE 17 FEB 00

AWARD (To be completed by Government)  
21. ACCEPTED 0001, 0002, 0003 and 0004

22. AMOUNT \$8,061,080  
23. ACCOUNTING AND APPROPRIATION DATA See Page 00010-2(a)

24. SUBMIT INVOICES TO ADDRESS SHOWN IN (4 copies unless otherwise specified) ITEM 26  
25. OTHER THAN FULL AND OPEN COMPETITION PURSUANT TO ☐ 10 U.S.C. 2304(c) ☐ 41 U.S.C. 253(c)  
26. ADMINISTERED BY CODE  
27. PAYMENT WILL BE MADE BY US Army Corps of Engineers Finance Center  
CEFC-AO-P  
5720 Integrity Drive  
Millington, TN 38054-5005

CONTRACTING OFFICER WILL COMPLETE ITEM 28 OR 29 AS APPLICABLE

☐ 28. NEGOTIATED AGREEMENT (Contractor is required to sign this document and return copies to the issuing office.) Contractor agrees to furnish and deliver all items or perform all work requirements identified on this form and any continuation sheets for the consideration stated in this contract. The rights and obligations of the parties to this contract shall be governed by (a) this contract award, (b) the solicitation, and (c) the clauses, representations, certifications, and specifications incorporated by reference in or attached to this contract.  
☒ 29. AWARD. (Contractor is not required to sign this document.) Your offer on this solicitation is hereby accepted as to the items listed. This award consummates the contract, which consists of (a) the Government solicitation and your offer, and (b) this contract award. No further contractual document is necessary.

30A. NAME AND TITLE OF CONTRACTOR OR PERSON AUTHORIZED TO SIGN  
30B. SIGNATURE  
30C. DATE  
31A. NAME OF CONTRACTING OFFICER (Type or print) CHERYL A. ANDERSON  
31B. UNITED STATES OF AMERICA BY [Signature]  
31C. AWARD DATE 16 MAY 2000

## **ALTERATIONS IN CONTRACT** (FAR 52.252-4) (APR 1984)

PORTIONS OF THIS CONTRACT ARE ALTERED AS FOLLOWS:

1. The Joint Venture's subcontracting plan is hereby incorporated into the contract, and can be found immediately following schedule page 00010-5 (00010-6 through 00010-13).

2. The Joint Venture's prequalification proposal dated 5 October 1999 is hereby added to and incorporated into this contract in its entirety. Pages from the prequalification proposal showing the individuals who will perform work on the contract are included as pages JV-1 through JV-18, and can be found immediately following the subcontracting plan.

3. The General Wage Decisions ID990001 and ID990004 were changed to ID000001 and ID000004, respectively. General Wage Decisions No. ID000001, with 1 modification dated 2/25/2000, and No. ID000004, dated 2/11/2000, with 0 modifications, are incorporated into the contract. The Wage Decision Information page is revised by pen and ink change to reflect the new wage decision numbers.

4. The Joint Venture's technical proposal dated 10 January 2000, Final Proposal Revision dated 9 February 2000, and New Final Proposal Revision dated 17 February 2000 are hereby incorporated by reference in their entirety into the contract. In addition, the following clarifications are incorporated into the contract:

a. Clarification/Serial Letter No. 0002, dated 1 March 2000, agreed to incorporation of ID000001, with 1 mod, and ID000004, with 0 mods, into the contract at no additional cost. In addition, the schedule durations were clarified as follows: In accordance with Volume 2 of the initial technical proposal dated 10 January 2000, Table 3, on page 53 of that volume defines the proposed schedule as 289 calendar days for completion of Phase II and 278 calendar days for completion of Phase III.

b. Clarification/Serial Letter No. 0003, dated 3 March 2000, clearly stated agreement to incorporation of ID000001, mod 1, with no change to the proposed price. In addition, this letter moved pricing for roadwork that had been in line item 0006 to 0005. Specifically, the pricing for work on Clover Butte Road, Road ND-7 and the entrance road to site ND-7 was transferred to line item 0005.

Alterations to CONTRACT No. DACA67-00-C-0214

c. Clarification/Serial Letter No. 0004, dated 6 March 2000, provided a new pricing schedule to correct the increases inadvertently made to some of the bid schedule items when changing prices from line item 0006 to 0005. The contract total was readjusted to reflect the total proposed price of \$17,899,214.

5. The page below is altered (by pen and ink change) to incorporate the Contractor's proposed schedule as follows:

Page 00800-1, SC-1, COMMENCEMENT, PROSECUTION AND COMPLETION OF WORK: Item (c) is changed to read as follows: "to complete the entire work ready for use as follows:

All work except Optional Item 0008: 289 calendar days after date of receipt by Contractor of notice to proceed for design of project."

All work for Optional Item 0008: 278 calendar days after date of receipt by Contractor of notice to proceed for design for this work."

ACCOUNTING AND APPROPRIATION DATA:

570330000000 88082 32000021NK32100000000 NA 35026 = \$8,061,080.00



Submit Invoices as follows:

CONTRACT: DACA67-00-C-0214

Submit 3 Copies of Invoice to:

Fairchild Resident Office  
USAED, Seattle  
PO Box 1929  
Airway Heights, WA, 99001

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Submit 1 Copy of Invoice to:

Mountain Home AFB Resident Office  
USAED, Seattle  
390 Gunfighter Ave.  
Mt. Home AFB, ID 83648-5264

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**CH2M HILL Constructors, Inc. (CCI)**  
**Record Steel and Construction (RSCI)**  
Joint Venture

CONTRACT: DACA67-00-C-0214

**AUTHORITY TO BIND JOINT VENTURE**

This is to certify that the names and signatures of the members of the joint venture are listed below and that the persons signing the contract have authority actually to bind their firms pursuant to corporate or company rules. Each of the firms individually has full authority to enter into and execute contractual instruments on behalf of said firms with the United States of America, except as follows (state "none" or describe limitations, if any): none

This authority shall remain in full force and effect until such time as the revocation of authority by any cause whatsoever has been furnished in writing to, and acknowledged by, the Contracting Officer.

(Names of All Joint-Venture Firms and Names, Signatures and Titles  
of persons authorized to bind their firms in the joint venture)

FIRM NAME (typed): RSCI dba Record Steel and Construction, Inc.

Susan T. Record  
NAME (typed)

  
SIGNATURE

President  
TITLE (typed)

FIRM NAME (typed): CH2M HILL Constructors, Inc.

Ronald A. Campbell  
NAME (typed)

  
SIGNATURE

Executive Vice-  
President  
TITLE (typed)

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**CH2MHILL**

CONTRACT: DACA67-00-C-0214

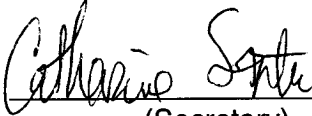
## **CH2M HILL Constructors, Inc.**

RFP No. DACA67-00-R-0001

Contract No.: \_\_\_\_\_

### **CORPORATE CERTIFICATE**

I, Catherine M. Santee, certify that I am the Secretary of the corporation named as Contractor herein; that Ronald A. Campbell, who signed this contract on behalf of the Contractor was then Executive Vice President of said corporation; that said contract was duly signed for and on behalf of said corporation by authority of its governing body and is within the scope of its corporate powers.

  
(Secretary) (CORPORATE SEAL)

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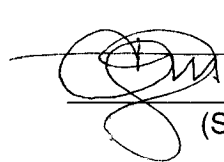
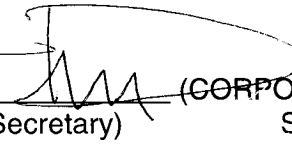
# RSCI dba Record Steel and Construction

RFP No. DACA67-00-R-0001

Contract No.: DACA67-00-C-0214

## CORPORATE CERTIFICATE

I, Clayton Record, certify that I am the Secretary of the corporation named as Contractor herein; that Susan T. Record, who signed this contract on behalf of the Contractor was then President of said corporation; that said contract was duly signed for and on behalf of said corporation by authority of its governing body and is within the scope of its corporate powers.

 (Secretary)  (CORPORATE SEAL)

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SCHEDULE

Item No.	Description of Item	Estimated Quantity	Unit	Unit Price	Amount
	BASE ITEMS				
0001	All Work for Design and Construction of ETI Phase II Sites, Except for Base Items 0002, 0003 and 0004, and Optional Items 0005, 0006, 0007, 0009, and 0010	1	JOB	L.S.	\$7,941,080.00
0002	All Work for As-Built Drawings in Electronic Format as Specified, from Preparation to Final Submittal	1	JOB	L.S.	\$30,000.00
0003	All Work for O&M Manuals, as Specified, from Preparation to Final Submittal	1	JOB	L.S.	\$75,000.00
0004	All Work for 1354 Data/Installed Equipment List, as Specified, from Preparation to Final Submittal	1	JOB	L.S.	\$15,000.00
	TOTAL BASE ITEMS				\$8,061,080.00
	OPTIONAL ITEMS				
0005	Design and Construction of ETI Phase II ¼ Acre and 1 Acre Emitter Sites, Including Roads	1	JOB	L.S.	\$2,398,650.00
0006	Design and Construction of ETI Phase II Site ND-7	1	JOB	L.S.	\$538,924.00
0007	Bird Deterrent Balls at Phase II Juniper Butte Drop Site Reservoir	1	JOB	L.S.	\$99,710.00
0008	All Work for Design and Construction of ETI Phase III Sites Except for Optional Items 0009 and 00100	1	JOB	L.S.	\$6,790,708.00
0009	All Work for Design and Construction of Alternative Septic Systems at One 1-Acre Site (For Areas of Shallow Rock Depth)	1	JOB	L.S.	\$5,071.00
0010	All Work for Design and Construction of Alternative Septic Systems at One Additional 1-Acre Site (For Areas of Shallow Rock Depth)	1	JOB	L.S.	\$5,071.00
	TOTAL OPTIONAL ITEMS	1	JOB	L.S.	\$9,838,134.00
	TOTAL ALL ITEMS				\$17,899,214.00

NOTE: 1. The dollar amounts established for Items 0002, 0003, and 0004 shall not be revised by the bidder.

2. No partial or total payment will be made for Items 0002, 0003, and 0004, until the as-built drawings, the O&M Manuals, and the 1354 Data/Installed Equipment List are fully approved (A or B action as defined in Section 01330, Submittal Procedures).

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SMALL, SMALL DISADVANTAGED AND WOMEN-OWNED  
SMALL BUSINESS SUBCONTRACTING PLAN

DATE: March 7, 2000.

CONTRACTOR: CCI/RSCI JOINT VENTURE

ADDRESS: 1854 EAST LANARK STREET

PHONE NO: 208-887-1401

PROJECT TITLE: DESIGN/BUILD ETI PHASE II

SOLICITATION NO: DACA67-00-R-0001

1. In accordance with the contract clauses at 52.219-8 and 52.219-9, CCI/RSCI Joint Venture submits the following Subcontracting Plan for Small, Small Disadvantaged, and Women-owned Business Concerns.
2. Corresponding dollar values for percentages cited in para. 3:
  - a. Total contract amount is \$ 8,061,080.00.
  - b. Total dollars planned to be subcontracted: \$ 4,571,024.00.
  - c. Total dollars planned to be subcontracted to small business concerns: \$ 3,986,924.00.
  - d. Total dollars planned to be subcontracted to HUBZone small business: \$ 0.
  - e. Total dollars planned to be subcontracted to small disadvantaged business concerns: \$ 404,054.00.
  - f. Total dollars planned to be subcontracted to small woman-owned business concerns: \$ 607,723.00.
3. The following percentage goals are applicable to the contract awarded under the solicitation cited above.
  - a. The total estimated percentage of all planned subcontracting to all types of business concerns under this contract is: 67 %.
  - b. Small Business Concerns: 75 % of total planned subcontracting dollars under this contract will go to subcontractors who are small business concerns including 3c. and 3d.
  - c. Small HUBZone Business Concerns: 0 % of total planned subcontracting dollars under this contract will go to subcontractors who are HUBZone small business contractors. (SEE the definition in contract clause 52.219-8(c) or use the internet: <http://www.sba.gov/hubzone/> for further information.)
  - d. Small Disadvantaged Business Concerns: 5 % of total planned subcontracting dollars under this contract will go to subcontractors who are small

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disadvantaged individuals. **NOTE:** Women-owned businesses are not considered a small disadvantaged business. Do not include subcontract awards to women-owned businesses in your calculations for paragraph 3c unless the firm meets the definition of a small disadvantaged business.

- e. Small Woman-Owned Business Concerns: 9 % of total planned subcontracting dollars under this contract will go to subcontractors who are small woman-owned businesses.

4. The principal items or areas we will subcontract under this contract are:

<u>FIRM NAME</u>	<u>SCOPE OF WORK</u>	<u>BUS SIZE</u>	<u>TOTAL %SUB\$</u>	<u>TOTAL \$SUB\$</u>
CCI/RSCI A Joint Venture	PROJECT OVERSIGHT CONCRETE CONST.	LB	32.84%	\$5,878,866
WJA	A&E SERVICES	SB	8.57%	\$1,030,000
WESTERN	EARTH WK / RDWY WK	LB	24.01%	\$2,886,647
RAD	SEEDING	SWOB	2.49%	\$299,106
SLOAN FENCING	FENCING	SB	4.50%	\$541,001
PALUTTE TRIBAL COUNCIL	EARTHWRK/RDWK WORK LABOR	SDB	2.50%	\$300,000
RAINIER	SITE WORK	SWOB	7.10%	\$820,923
SOMMERS	SOMMERS MASONRY	SB	2.08%	\$250,186
K&T BSE	STRUCTURAL STEEL	SB	3.79%	\$485,034
TOLLEY HUGHES	ROOFING	LB	1.30%	\$155,767
AMERICAN WALL COVER	GWB, MTL STUDS	SB	0.83%	\$99,705
WRIGHT BUILDING SYSTEMS	SPECIALTIES	SDB	1.80%	\$216,757
STOCKWELL PAINT	PAINTING	SB	0.65%	\$77,818
COASTAL NETTING	BIRD DETERENT	SB	1.33%	\$160,121
WRIGHT BUILDING SYSTEMS	CABINetry	SDB	0.34%	\$41,135
HOP	METAL BLDG ERECTION	SB	8.06%	\$969,285
AAA HOIST	O/HEAD CRANE	SB	0.66%	\$79,151
NU MECH	MECHANICAL	SB	11.99%	\$1,441,308
MASTER ELECTRIC	SITE ELECTRIC	SB	18.27%	\$2,166,404

The CCI/RSCI subcontracting goals were achieved by prior experience with most of the subcontractors listed. Our past history as a minority and women owned business has

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helped us realize the needs of those still growing. We intend to fully support the small business community.

5. Indirect costs were not used in establishing subcontracting goals.

6. The following individual will administer CCI/RSCI JOINT VENTURE Subcontracting Program:

Name: Robin Black Job Title: Small Business Administrator

Address and Telephone Number: RSCI 1854 E. Lanark Meridian, Id. 83642

This individual's specific duties with regard to the conduct of our firm's Subcontracting Plan will include, but will not be limited to, the following:

- a. Developing and maintaining bidders lists of small business, small business, small disadvantaged business and women-owned small business concerns using sources such as the Small Business Administration's ProNet (<http://pro-net.sba.gov/>) Washington State Office of Minority and Women-owned Business Enterprises (<http://www.wsdot.wa.gov/omwbe/>) Minority Business Development Agency, US Department of Commerce, Local Minority Business Development Centers, Economic Development Centers, and National Center for American Indian Enterprise Development.
- b. Assuring the inclusion of small business, HUBZone small business, small disadvantaged, and women-owned small business concerns in all solicitations for products or services which they are capable of providing; and ensuring that all solicitations are structured to permit the maximum possible participation by small, small disadvantaged and women-owned small business concerns.
- c. Establishing and maintaining records of all solicitations and subcontract awards to ensure that the members of the firm who review bidders proposals documents their reasons for selecting or not selecting a bid submitted by a small business, HUBZone small business, small disadvantaged or women-owned small business concern, and monitoring the firm's progress towards achievement of its percentage goals.
- d. Preparing and submitting the Subcontracting Report for Individual Contracts (SF 294) and the Summary Subcontract Report (SF 295) in accordance with instructions provided, and coordinating and preparing for all compliance reviews by Federal agencies.
- e. Conducting or arranging for all other activities necessary to further the intent and attainment of the goals in the Plan to include motivational training of the firm's purchasing personnel, attendance at workshops, seminars and trade fairs conducted by or on behalf of small business, HUBZone small business, and/or small disadvantaged and/or women-owned small business concerns; and general cooperation with members of the small, small disadvantaged and women-owned small business concerns or their representatives.

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7. The following steps will be taken to ensure that small business, small HUBZone small business, small disadvantaged business and women-owned small business concerns receive notice of and have an equitable opportunity to compete for intended awards of subcontracts and/or purchase orders for the products and/or services describe in paragraph 4 above:
    - a. Sources will be requested through SBA's ProNet system, business development organizations, minority and small business trade associations and at small, minority and women-owned small business procurement conferences; sources will be contacted; and bidding materials will be provided to all responding parties expressing an interest.
    - b. Internally, motivational training will be conducted to guide and encourage purchasing personnel; source lists and guides to small business, HUBZone small business, small disadvantaged and women-owned small business concerns will be maintained and utilized by purchasing personnel while soliciting subcontracts and purchase orders; activities will be monitored to ensure sufficient time is allowed for interested bidders to prepare their proposals and to evaluate continuing compliance with the Subcontracting Plan.
  8. CCI/RSCI Joint Venture agrees that the clause entitled "Utilization of Small Business Concerns" (Jan 1999) will be included in all subcontracts that offer further subcontracting opportunities. All subcontractors, except small business concerns, who receive subcontracts in excess of \$500,000 (\$1,000,000 in the case of construction) will be required to adopt a plan similar to this one. Such plans will be reviewed to assure that all minimum requirements of an acceptable subcontracting plan have been satisfied.

The acceptability of percentaged goals shall be determined on a case-by-case basis depending on the supplies/services involved, the availability of potential small business, HUBZone small business, small disadvantaged, and women-owned subcontractors, and prior experience. Once approved and implemented, plans will be monitored through the submission of periodic reports or, as time and availability of funds permit, periodic visits to subcontractors facilities to review applicable records and subcontracting program progress.

9. CCI/RSCI Joint Venture agrees to submit such periodic reports and cooperate in any studies or surveys as may be required by the Contracting agency or Small Business Administration in order to determine the extent of compliance by the offeror with the subcontracting plan and with the clause entitled "Utilization of Small Business Concerns" contained in the contract.
10. CCI/RSCI Joint Venture agrees to maintain at least the following types of records to document compliance with the Subcontracting Plan:
  - a. The names of all organizations, agencies, and associations contacted for small business, HUBZone small business, small disadvantaged and women-owned small business sources, along with records of attendance at conference, seminars and trade fairs where additional sources were developed.

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- b. Source lists, guides, and other data identifying small business, HUBZone small business, small disadvantaged and women-owned small business subcontractors and vendors.
- c. Records on all subcontract solicitations resulting in an award of more than \$100,000 on a contract-by-contract basis, indicating (1) whether small business concerns were solicited, and if not, why not; (2) whether HUBZone small business were solicited, and if not, why not; (3) whether small disadvantaged business concerns were solicited, and if not, why not; (4) whether small women-owned business concerns were solicited, and if not, why not; and (5) reasons for the failure of solicited small, small disadvantaged or women-owned small business concerns to receive a subcontract award.
- d. Records of all subcontract award data to include subcontractor's name and address, to be kept on a contract-by-contract basis.
- e. Minutes of internal motivational and training meetings held for the guidance and encouragement of purchasing personnel, and records of all monitoring activities performed for compliance evaluation.
- f. Copies of SF 294 and SF 295 showing date and place of filing and copies of all other reports or results of reviews conducted by the contracting agency or other interested agencies of the Federal government to monitor our compliance with this Subcontracting Plan.
11. CCI/RSCI Joint Venture will submit a SF 295, Summary Subcontract Report, on Corps of Engineers projects only. The SF 295 shall be completed and distributed in accordance with the Corps of Engineers Supplemental Instructions. CCI/RSCI JOINT VENTURE will not report Corps of Engineers projects through any other Agency unless authorized by the Contracting Officer.
12. In closing, CCI/RSCI Joint Venture states that it will be the policy of CCI/RSCI Joint Venture to afford every practicable opportunity for small business, HUBZone small business, small disadvantaged and women-owned small business concerns to participate in contracts awarded to CCI/RSCI Joint Venture by the Federal Government, to ensure that equitable opportunity is provided to small business, HUBZone small business, small disadvantaged and women-owned small business concerns to compete for award of subcontracts and purchase orders, and to diligently pursue the achievement of our goals of participation by small business, HUBZone small business, small disadvantaged and women-owned small businesses in the dollars available for subcontract/purchase order awards under this contract.

BY:

  
Clayton Record  
CCI/RSCI Joint VentureDate: March 7, 2000

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	<u>Dollars</u>	<u>Percentage</u>
1. Option #5 total:	<u>\$ 2,398,650.00</u>	<u>13%</u>
2. Total to be subcontracted to all types of businesses:	<u>\$ 1,980,945.00</u>	<u>82%</u>
a. Subcontracted to Small Business (Including b, c, and d. below)	<u>\$ 1,159,845.00</u>	<u>58%</u>
b. Subcontracted to HUBZone Small Businesses:	<u>\$ -</u>	<u>0%</u>
c. Subcontracted to Small Disadvantaged Businesses:	<u>\$ 76,102.00</u>	<u>4%</u>
d. Subcontracted to Women-Owned Small Businesses:	<u>\$ 128,000.00</u>	<u>6%</u>

	<u>Dollars</u>	<u>Percentage</u>
1. Option #6 total:	<u>\$538,924.00</u>	<u>3%</u>
2. Total to be subcontracted to all types of businesses:	<u>\$437,001.00</u>	<u>81%</u>
a. Subcontracted to Small Business (Including b, c, and d. below)	<u>\$401,606.00</u>	<u>91%</u>
b. Subcontracted to HUBZone Small Businesses:	<u>\$ -</u>	<u>0%</u>
c. Subcontracted to Small Disadvantaged Businesses:	<u>\$ 30,000.00</u>	<u>7%</u>
d. Subcontracted to Women-Owned Small Businesses:	<u>\$ 42,000.00</u>	<u>10%</u>

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	<u>Dollars</u>	<u>Percentage</u>
1. Option #7 total:	<u>\$99,710.00</u>	<u>1%</u>
2. Total to be subcontracted to all types of businesses:	<u>\$90,501.00</u>	<u>91%</u>
a. Subcontracted to Small Business (Including b, c, and d. below)	<u>\$90,501.00</u>	<u>100%</u>
b. Subcontracted to HUBZone Small Businesses:	<u>\$ -</u>	<u>0%</u>
c. Subcontracted to Small Disadvantaged Businesses:	<u>\$ -</u>	<u>0%</u>
d. Subcontracted to Women-Owned Small Businesses:	<u>\$ -</u>	<u>0%</u>

	<u>Dollars</u>	<u>Percentage</u>
1. Option #8 total:	<u>\$6,790,708.00</u>	<u>38%</u>
2. Total to be subcontracted to all types of businesses:	<u>\$4,931,676.00</u>	<u>73%</u>
a. Subcontracted to Small Business (Including b, c, and d. below)	<u>\$3,329,858.00</u>	<u>68%</u>
b. Subcontracted to HUBZone Small Businesses:	<u>\$ -</u>	<u>0%</u>
c. Subcontracted to Small Disadvantaged Businesses:	<u>\$ 257,138.00</u>	<u>5%</u>
d. Subcontracted to Women-Owned Small Businesses:	<u>\$ 333,106.00</u>	<u>7%</u>

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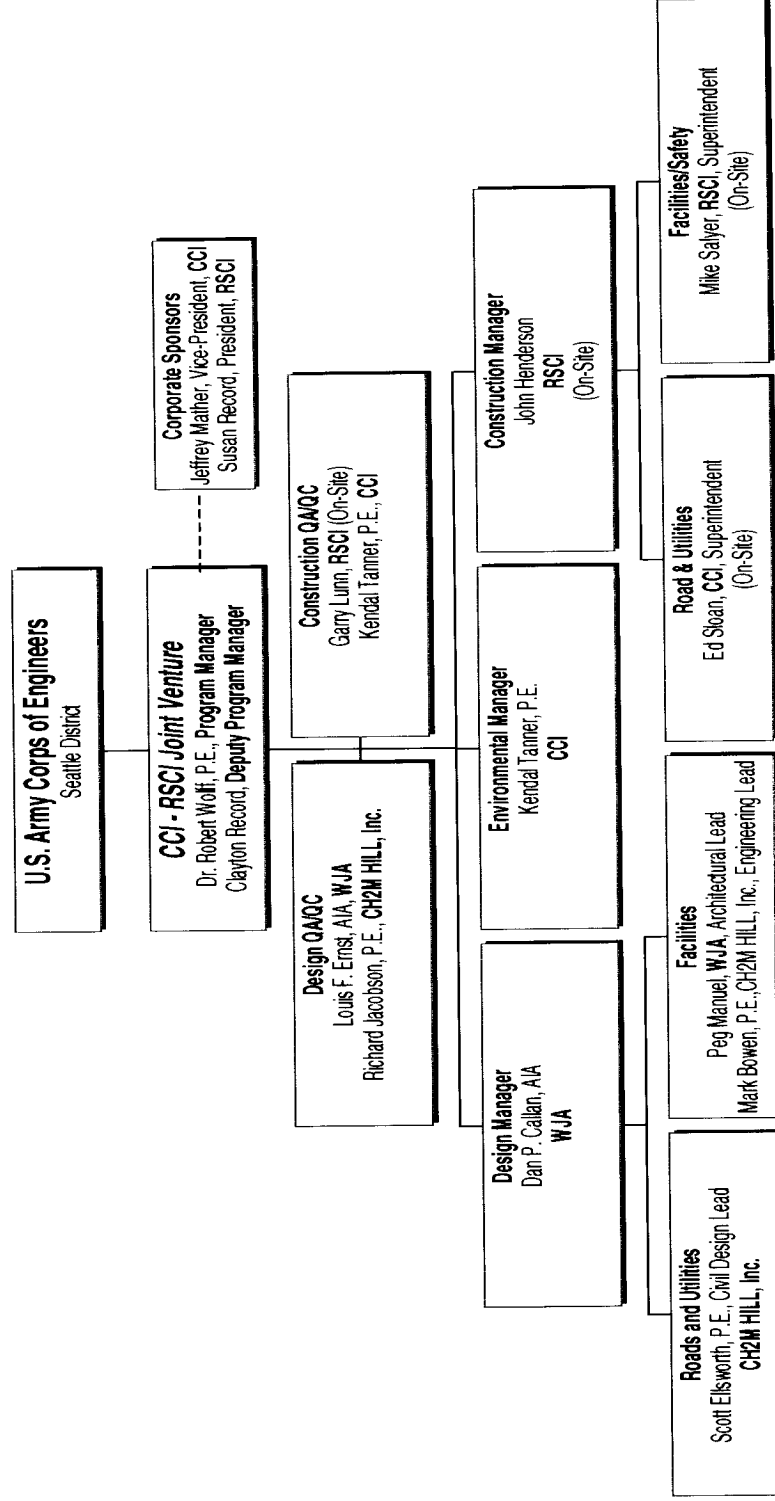
	<u>Dollars</u>	<u>Percentage</u>
1. Option #9 total:	<u>\$5,071.00</u>	<u>0%</u>
2. Total to be subcontracted to all types of businesses:	<u>\$4,600.00</u>	<u>91%</u>
a. Subcontracted to Small Business (Including b, c, and d. below)	<u>\$4,600.00</u>	<u>100%</u>
b. Subcontracted to HUBZone Small Businesses:	<u>\$ -</u>	<u>0%</u>
c. Subcontracted to Small Disadvantaged Businesses:	<u>\$ -</u>	<u>0%</u>
d. Subcontracted to Women-Owned Small Businesses:	<u>\$4,600.00</u>	<u>100%</u>

	<u>Dollars</u>	<u>Percentage</u>
1. Option #10 total:	<u>\$5,071.00</u>	<u>0%</u>
2. Total to be subcontracted to all types of businesses:	<u>\$4,600.00</u>	<u>91%</u>
a. Subcontracted to Small Business (Including b, c, and d. below)	<u>\$4,600.00</u>	<u>100%</u>
b. Subcontracted to HUBZone Small Businesses:	<u>\$ -</u>	<u>0%</u>
c. Subcontracted to Small Disadvantaged Businesses:	<u>\$ -</u>	<u>0%</u>
d. Subcontracted to Women-Owned Small Businesses:	<u>\$4,600.00</u>	<u>100%</u>

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# CCI-RSCI Joint Venture PROJECT ORGANIZATION



## ETI Design-Build Project Delivery Team

The mission of the ETI Project Delivery Team is to efficiently and effectively deliver a quality project to the Air Force, and to meet all environmental requirements, in partnership with the Seattle District and Mountain Home Air Force Base.

### Corporate Sponsors

Mr. Jeff Mather, Vice President and Chief Operations Officer, CH2M HILL Constructors, Inc., and Ms. Susan Record, President, RSCI, Inc., as Corporate Sponsors, will ensure that the program has the full support and resources needed to execute the project.

### Program Manager (PM)—Deputy Program Manager (DPM)

The Program Management roles and responsibilities began in the proposal phase and will continue throughout the life of the project. Bob Wolff, PM, has been designated as the Point of Contact (POC) for the COE for all contractual matters, on behalf of the Joint Venture and will perform his management responsibilities from CH2M HILL's Boise office. Both he and Clayton Record, DPM, will bear the responsibility of delivering this project under a CCI-RSCI Joint Venture agreement which will be signed prior to our submittal of a price proposal. The DPM will function as second in command and be available to perform as PM, as required. Bob Wolff and Clayton Record jointly assembled the team and will continue to work closely together to direct the design, construction, and environmental coordination of the ETI project. The PM and DPM will attend design review meetings and site visits as required to effectively manage the project. Clayton Record will assist the PM, Design QA/QC, and Construction QA/QC in the initial assembly of the proposal schedule and budget. This involvement will carry on after project award as he assists the designers, subcontractors, construction manager, and Superintendents in resource loading the project schedule. The PM and DPM will work closely with the designated government representatives throughout the design and construction process, and the principal members of the project team, to maintain open lines of communication and effectively manage the project. The JV will establish a project Web site to facilitate communications among the team and stakeholders.

### Design QA/QC

Louis Ernst (Seattle) and Dick Jacobson (Boise) will provide continual QA/QC of the design from schematics through construction documents. They will develop the design schedule and assist in its integration into the Project Schedule. Design QA/QC will interface with the Construction QA/QC team members, as the design progresses. Design QA/QC will conduct reviews as the design milestones are met. They will report to the project team any deficiencies discovered. WJA will cross check CH2M HILL designs and CH2M HILL will cross check WJA designs.

### Construction QA/QC

Garry Lunn and Kendal Tanner (both in Boise) will be involved during the design phase of this proposal and subsequent execution of design and construction as the construction QA/QC team members. They will conduct constructibility reviews with the design team. The Construction QA/QC will be present on site during all construction activities and will submit daily reports to the designated COE individual and copy others as required. The Construction QA/QC will update the Project Schedule on a periodic basis so that it is fully coordinated between the Seattle District, Mountain Home Air Force Base, the JV, and other stakeholders.

### Design Manager (DM)

Dan Callan (Seattle) will be the primary POC for design with Corps of Engineers and Air Force representatives. He will report directly to the PM/DPM. WJA and CH2M HILL electronic systems are totally compatible for file transfer. This will allow the DM to review drawings, regardless of their generation point, at any time. The DM will be responsible for the drawing assembly and verify adherence to the RFP as well as Design QA/QC comments. The DM will ensure that all disciplines are coordinated and produce design documents for the Joint Venture that meets the Air Force's requirements, and a set of as-built drawings for the Air Force to operate and maintain the project following completion. The Design Team will work closely with the PM/DPM, EM, and CM during proposal development and subsequent design to ensure that the intent of the RFP is met or exceeded with the most cost-effective approach.

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## **ETI Design-Build Project Delivery Team**

### **Environmental Manager (EM)**

Kendal Tanner (Boise) will establish guidelines for our designers and construction contractors based on the RFP and the mitigation requirements in the Record of Decision. Mr. Tanner will provide environmental oversight throughout all phases of proposal development through construction completion. We will jointly develop an Environmental Plan with the Base and Seattle District. The EM will conduct site visits and ensure compliance with the JV's established environmental plan. The EM will report directly to the PM/DPM and work closely with the Mountain Home AFB PM.

### **Construction Manager (CM)**

John Henderson (Meridian) will coordinate all site construction activities and report directly to the PM/DPM, and work closely with the COE Project Manager and Resident Engineer as the construction proceeds. He will ensure that the schedule, budget and quality of the construction meet or exceed the standards established in the approved plans and specifications. The CM will ensure that all required project reports are timely and complete. The CM will be intimately familiar with the project drawings and scopes of work to be performed by subcontractors. He will schedule and compile all subcontracts for the project, and will establish cost controls and verify project progress billings.

### **Roads and Utilities Design Lead**

Scott Ellsworth (Boise) will lead the team designing roadways that are safe and durable while minimizing adverse impacts on the environment. Scott will work with Dan Callan to ensure that the roads and utilities are consistent with the overall design intent of the project. He will work closely with the EM to ensure that the roads and utilities designs meet environmental requirements.

### **Facilities Design Leads**

Peg Manuel from WJA (Seattle) will create our initial architectural concept from the RFP, together with Mark Bowen (Boise) who will provide the engineering support from the CH2M HILL part of our team. Both will act together in a design management role. The

Facilities Design Leads will assemble a set of documents that addresses environmental issues, user needs, and constructibility issues. Peg will be responsible for coordinating the final assembly of drawings, specifications, and record documents for the project. Peg will coordinate the engineering support to the JV during construction.

### **Roads and Utilities Superintendent**

Ed Sloan (Boise) will oversee construction of roads and utilities to be performed by subcontractors. He will work as a team with Mike Salyer in coordinating site work. Ed will report to the CM and advise him of schedule progress and contractual needs. The local site COE representative, CM, Facilities Superintendent and Ed Sloan will build the project as a team. Ed will be play an important role in developing and implementing the environmental plan, including the control of excavation and grading equipment to minimize impact on the environment. Ed will be responsible for resolving punch list issues and turnover of roads and utilities to the Air Force.

### **Facilities and Safety Superintendent**

Mike Salyer (Meridian) will have a dual role as the Facilities Superintendent and the Fire and Safety Superintendent, and will work as a counterpart with Ed Sloan. Mike Salyer will oversee the vertical construction and implement safety plans for all crafts. Mike Salyer will report to the CM as Facilities Superintendent and to the PM/DPM as the Fire and Safety Superintendent. As Facilities Superintendent, Mike Salyer will schedule and coordinate subcontractor activities related to facilities out to 5 feet from the structures, and will be responsible for resolving punch list issues and turnover of facilities to the Air Force.

### **Construction Subcontractors**

The JV will select construction subcontractors to provide the best price and quality to the Air Force. Subcontractors will be identified and involved in the preparation of our technical and price proposals and contracts will be signed subsequent to completion of design.

## Personnel Qualifications / Experience

Name/Title:  
Robert D. Wolff, P.E., Vice President, Transportation & Director, DOD

Proposed Duties / Functions:  
Program Manager, CCI/RSCI Joint Venture

Firm affiliation:  
CH2M HILL Constructors, Inc. (CCI)

Years of experience: With This Firm 1 With Other Firms 33

Education (Degree, Year, Specialization):  
Ph.D., 1972, Civil Engineering; M.S., 1971, Engineering-Economic Planning; B.S., 1965, General Engineering

Active Registration and/or Professional Licenses:  
Professional Engineer: DC

**Specific Qualifications:**  
As Deputy Civil Engineer, HQ US Air Force (1994-97); provided oversight of \$6 billion annual program, including design; construction; operation and maintenance of roads, utilities, facilities, and housing; environmental planning; compliance; remediation; and conservation at 150 Air Force installations. As Chief of Engineering, Baltimore District, Corps of Engineers (1991-94), managed a design for a \$1 billion military construction program.

### Relevant projects:

- **Vehicle Maintenance Facility & Amphitheater renovation projects, Arlington National Cemetery, Arlington, VA.** Design / \$6,000,000 / 1993 / Chief Engineer.
- **Redesign of Metalworking Training Facility, Aberdeen Proving Ground, MD.** Design / \$3,000,000 / 1994 / Chief Engineer.
- **Defense Logistics Agency Building, Ft Belvoir, VA.** Design / \$105,000,000 / 1991 / Chief Engineer.
- **Army Research Laboratory, Adelphi, MD and Aberdeen Proving Ground, MD.** Design / \$27,000,000 / 1992 / Chief Engineer.
- **Integrated Training and Management System (ITAMS) which provided an innovative approach to management of Army training ranges.** Planning / \$1,000,000 / 1988-91 / Director of Facilities Engineering.
- **Pentagon Renovation Project, The Pentagon, Washington, D.C.** Preliminary Design / \$1,000,000 / 1991-1994 / Chief Engineer.

Name/Title:  
Clayton Record

Proposed Duties / Functions:  
Deputy Project Manager

Firm affiliation:  
RSCI

Years of experience: With This Firm 11 With Other Firms 19

Education (Degree, Year, Specialization):

Active Registration and/or Professional Licenses:

### Specific Qualifications:

Clayton has nearly 30 years of "hands-on" field experience in the planning, execution and control of construction operations for major commercial, industrial and heavy civil projects. Additionally, Clayton's background includes recruiting and directing administrative, engineering and field personnel; determining needs and procuring equipment, estimating and bidding projects and troubleshooting field construction problems.

### Relevant projects:

- **B1-B Conventional Munitions Shop/Storage Igloos, MHAFB, ID.** Design and construction of concrete munitions storage igloo, maintenance facility with bridge crane and site work. Design-Build / \$4,810,714 / 2001 / Senior Program Manager.
- **FY99 Dormitory, MHAFB, ID.** New 5200 SM, 140-person dormitory. Design-Build / \$8.79M / 2000 / Senior Program Manager.
- **John Day River Bridge, John Day, OR.** Install 265 LF bridge and 1.2 miles of asphalt road in remote area. Construction / \$3,313,467 / 1999 / Senior Program Manager.
- **FY98 Dormitory, MHAFB, ID.** New 4620 SM, 140-person dormitory. Design-Build / \$6.98M / 1999 / Senior Program Manager.
- **Explosive Ordnance Disposal Facility, Malinstrom AFB, MT.** Facility to conduct classified training as well as a space to perform maintenance, storage and administration / Design-Build / \$1.31M / 1999 / Senior Program Manager.
- **F15 Squadron Operations, MHAFB, ID.** New operations building for pilots and planning. Construction / \$2,511,502 / 1999 / Senior Program Manager.

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## Personnel Qualifications / Experience

Name/title:  
Louis F. Ernst, AIA

Proposed Duties / Functions:  
Quality Assurance

Firm affiliation:  
WJA, P.S. Architects / Engineers / Planners

Years of experience: With This Firm 18 With Other Firms 5

Education (Degree, Year, Specialization):  
M.A., 1982, Architecture & Urban Planning, University of Washington  
B.A., 1976, Environmental Design, University of Kansas

Active Registration and/or Professional Licenses:  
1980 / Architecture, State of Washington

Specific Qualifications:  
Lou Ernst brings over 19 years in architectural design, including feasibility studies, master planning, design and construction documents, specifications, cost estimates, and project management. Lou has extensive experience in site planning and facility programming on large-scale complex facilities for the DoD. His understanding of DoD procedures and technical design criteria assure quality design documents and cost control on projects, particularly those for the US Navy, for which Lou has often had the lead role.

- Relevant projects:
- **C-17 Maintenance Training Facility, McChord AFB, WA.** Design and preparation of plans and specifications for a 3,190 square meter facility with classrooms and simulator rooms for providing hands-on C-17 maintenance instructions. Design / \$5,685,000 / 1997 / Quality Assurance.
  - **Ground Support Equipment Shop Facility, NAS Whidbey Island, WA.** 4,100 sf of enclosed shop space for vehicle maintenance, 5 ton bridge crane, 50,000 lb hydraulic vehicle lift. Adjacent 4,600 sf holding shed enclosures shelter custom designed paint and blast booths. Design / \$3,150,000 / 1996 / Quality Assurance.
  - **Explosive Ordnance Facility, Malmstrom AFB, MT.** A 950 SM facility to conduct classified training, maintenance on equipment, weapons storage, emergency response equipment storage, and administration. Design-Build / \$1,200,000 / 1999 / Quality Assurance.

Name/title:  
Richard Jacobson, P.E.

Proposed Duties / Functions:  
Design QA/QC

Firm affiliation:  
CH2M HILL

Years of experience: With This Firm 10 With Other Firms 13

Education (Degree, Year, Specialization):  
B.S., 1972, Civil Engineering

Active Registration and/or Professional Licenses:  
Professional Engineer: ID, CA, MT; Civil Engineer: IA

Specific Qualifications:  
Dick Jacobson is a senior transportation engineer with 26 years of experience in project management, planning, design, and construction administration. He has had responsibility for project management and design of numerous surface transportation facilities, including streets, highways, and site development and has frequently served as a senior technical reviewer. He is the Project Delivery Manager for the Transportation Dept. and as such is responsible for project quality, budget, and schedule.

- Relevant projects:
- **36th Street Safety Improvements Project, Boise, ID.** Widening to three lanes to provide two travel lanes and a center two-way left turn lane. Included drainage and irrigation system improvements. Design / 1995 / \$200,000, design; \$3 million, const. / Engineering Manager.
  - **Federal Way, Vista to Gekeler, Boise, ID.** Design for arterial street reconstruction. Projects involved complete reconstruction of the existing two-lane roadways to four lanes. Design / 1999 / \$950,000, design; \$20 million, const. / Senior Review.
  - **Rose Road Underpass, Blackfoot, ID.** Replace the washed-out Rose Road Underpass crossing I-15 in Bingham County, Idaho. Design / 1999 / \$640,000, design; \$2.8 million, const. / Senior Review.
  - **US 95, Worley to Mica, ID.** Environmental study and alignment for 20 miles of highway. Design / 1999 / \$3,000,000 / Project Manager.

## Personnel Qualifications / Experience

Name/title:  
Garry Lunn

Proposed Duties / Functions:  
Quality Assurance / Quality Control

Firm affiliation:  
RSCI

Years of experience: With This Firm 1 With Other Firms 9

Education (Degree, Year, Specialization):  
Bachelor of Science, 1997, Construction Management

Active Registration and/or Professional Licenses:

### Specific Qualifications:

Garry Lunn serves as a project manager and QA/QC for RSCI. Garry has over 9 years of experience in construction project engineering, supervision, and management on a variety of commercial and industrial projects. Garry's skills encompass all phases of project management including negotiation of change orders, permits acquisition, scheduling, submittals, contracts, subcontractor relations, cost reporting and analysis, project close out and capital inventory reports.

### Relevant projects:

- **B1-B Conventional Munitions Shop/Storage Igloos, MHAFB, ID.** Design and construction of concrete munitions storage igloo, maintenance facility with bridge crane and site work. Design-Build / \$4,810,714 / 2001 / Project Manager.
- **PMEL, MHAFB, ID.** Repair HVAC system and install new roof. Construction / \$953,000 / 1999 / Project Manager.
- **John Day River Bridge, John Day, OR.** Install 265 LF bridge and 1.2 miles of asphalt road in remote area. Construction / \$3,313,467 / 1999 / Project Manager.

Name/title:  
Kendal Tanner, P.E.

Proposed Duties / Functions:  
Environmental Manager, Construction QA/QC

Firm affiliation:  
CH2M HILL Constructors, Inc. (CCI)

Years of experience: With This Firm 0.8 With Other Firms 15

Education (Degree, Year, Specialization):  
B.S., 1984, Civil Engineering

Active Registration and/or Professional Licenses:  
Professional Engineer: CA

### Specific Qualifications:

Kendal Tanner's experience includes both Air Force and Corps planning, design, and construction QC and management. He managed environmental and engineering projects including the design and construction of industrial facilities and roadways. He excelled at maintaining productive dialogue with all stakeholders, including the public. Kendal was the Deputy Base Civil Engineer at Mountain Home AFB. He is very familiar with the stakeholder issues and the environmental sensitivities related to the ETI project and the Base/Seattle Corps organizational relationship.

### Relevant projects:

- **B1-B Bomber Beddown, Mountain Home AFB, ID.** Interface between the Base and the Seattle Corps for a facilities and infrastructure improvement program for the relocation of a B-1B squadron. Design and Construction / \$55,000,000 / 1998 / Deputy Base Civil Engineer.
- **Various Environmental Projects, McClellan AFB, CA and Travis AFB, CA.** Reviewed design and construction documents and managed development of environmental assessments required for construction projects. Design and Construction / \$60,000,000 total / 1996 / Environmental Manager.
- **Various Construction Projects, McClellan AFB, CA and Presidio of San Francisco, CA.** Provided construction quality control services for multiple facilities, infrastructure, and roadway projects. Design and Construction / \$40,000,000 total / 1992 / QA/QC Manager.



## Personnel Qualifications / Experience

Name/title:  
Daniel P. Callan, AIA

Proposed Duties / Functions:  
Principal in Charge / Project Manager

Firm affiliation:  
WJA, P.S. Architects / Engineers / Planners

Years of experience: With This Firm 20 With Other Firms 5

Education (Degree, Year, Specialization):  
M.A., 1977, Architecture, University of Washington  
B.A., 1972, Urban Planning, University of Washington

Active Registration and/or Professional Licenses:  
1980 / Architecture, State of Washington

**Specific Qualifications:**  
As WJA's Principal-in-Charge of Architecture, Dan Callan has more than 20 years experience in all areas of management and architectural design from site planning, programming and schematic design through construction documents, award of contracts and construction administration. He has been responsible for the site and master planning and design of many small and large-scale projects, including industrial, commercial, institutional and multi-family housing facilities. In addition to his design role, Dan Callan retains overall responsibility for architectural project management, project scheduling, quality control, and allocation of staff.

- Relevant projects:**
- **C-17 Maintenance Training Facility, McChord AFB, WA.** Design and preparation of plans and specifications for a 3,190 square meter facility with classrooms and simulator rooms for providing hands-on C-17 maintenance instructions. Design / \$5,685,000 / 1997 / Principal in Charge/Project Manager.
  - **Ground Support Equipment Shop Facility, NAS Whidbey Island, WA.** 4,100 sf of enclosed shop space for vehicle maintenance, 5 ton bridge crane, 50,000 lb hydraulic vehicle lift. Adjacent 4,600 sf holding shed enclosures shelter custom designed paint and blast booths. Design / \$3,150,000 / 1996 / Principal in Charge/Project Manager.
  - **Explosive Ordnance Facility, Malmstrom AFB, MT.** A 950 SM facility to conduct classified training, maintenance on equipment, weapons storage, emergency response equipment storage, and administration. Design-Build / \$1,200,000 / 1999 / Principal in Charge/Project Manager.

Name/title:  
Scott Ellsworth, P.E., P.L.S.

Proposed Duties / Functions:  
Roads and Utilities—Civil Design Manager

Firm affiliation:  
CH2M HILL

Years of experience: With This Firm 18 With Other Firms 1

Education (Degree, Year, Specialization):  
B.S., 1981, Forest Engineering

Active Registration and/or Professional Licenses:  
Professional Engineer: ID  
Professional Land Surveyor: ID

**Specific Qualifications:**  
Scott Ellsworth is a project manager in the Boise Office. He is experienced in transportation, general civil, and survey projects. Scott is primarily engaged in roadway design, site development for major building projects, land development, and survey and mapping projects. He has extensive local experience.

- Relevant projects:**
- **Federal Way, Vista to Gekeler, Boise, ID.** Design for arterial street reconstruction. Projects involved complete reconstruction of the existing two-lane roadways to four lanes. Design / \$950,000, design; \$20 million, const. / 1999 / Project Manager.
  - **36th Street Safety Improvements Project, Boise, ID.** Widening 36th Street to three lanes to provide two travel lanes and a center two-way left turn lane. The project also included drainage and irrigation system improvements. Design / \$200,000, design; \$3 million, const. / 1995 / Senior Consultant.
  - **Thorn Creek Road, Boise County, ID.** Realignment of approximately 2.5 miles of road in the environmentally sensitive Thorn Creek Canyon. Design and Construction Management / \$ 120,000 design; \$600,000 const. / 1997 / Senior Consultant.

## Personnel Qualifications / Experience

Name/title:  
Dean Harris, P.E.

Proposed Duties / Functions:  
Geotechnical Engineering

Firm affiliation:  
CH2M HILL

Years of experience: With This Firm 7 With Other Firms 3.5

Education (Degree, Year, Specialization):  
M.S., 1992, Civil Engineering; BS., 1987, Civil Engineering

Active Registration and/or Professional Licenses:  
Professional Engineer: ID, OR

### Specific Qualifications:

Dean Harris has many years of experience in the planning and execution of field explorations for geotechnical engineering. He is familiar with many types of drilling equipment and methods, and with various types of in-situ testing such as Standard Penetration Testing, Cone Penetrometer Testing, and Pressuremeter testing. He is experienced in rock coring and has supervised coring on several projects. Dean's experience in foundation evaluation includes the evaluation of spread-footing foundations, soft fine-grained materials, loose sandy materials, dense sand and gravels, and rock.

### Relevant projects:

- **US 95, Worley to Mica, ID.** Environmental study and realignment for 20 miles of highway. Design / \$3,000,000 / 1999 / Geotechnical Engineer.
- **Federal Way, Vista to Gekeler, Boise, ID.** Design for arterial street reconstruction. Projects involved complete reconstruction of the existing two-lane roadways to four lanes. Design / \$950, 000, design; \$20,000,000 const. / 1999 / Geotechnical Engineer.
- **Billy Shaw Dam, Duck Valley Reservation, NV.** Design of a 34-foot-high, zoned, earth-fill dam. Design / \$250,000, design; 2.5 million, const. / 1998 / Geotechnical Engineer.
- **I-15, Clark Street to Pocatello Creek Road Interchange Project, Pocatello, ID.** Widen interstate, replace bridge structures. Design / \$1 million, design; \$8 million, const./ 1998 / Geotechnical Task Leader.

Name/title:  
John Slonaker, P.L.S.

Proposed Duties / Functions:  
Roads and Utilities—Surveying

Firm affiliation:  
CH2M HILL

Years of experience: With This Firm 4 With Other Firms 15

Education (Degree, Year, Specialization):  
B.S., 1985, Construction Engineering Technology

Active Registration and/or Professional Licenses:  
Registered Professional Land Surveyor: ID, MT, TX

### Specific Qualifications:

John Slonaker is a project manager with 22 years of comprehensive experience in public right-of-way acquisition, professional land surveying, and heavy civil construction. John has had a successful track record based on pragmatic and resourceful approaches to solving complex problems.

### Relevant projects:

- **US 95, Worley to Mica, ID.** Environmental study and realignment for 20 miles of highway. Design / \$3,000,000 / 1999 / Survey Manager.
- **Claims Litigation, Wallowa-Whitman National Forest, Oregon.** Produced concise and accurate as-built drawings of 6 miles of U.S. Forest Service access road in support of a U.S. Justice Department construction claims litigation suit. Study / \$15,000 / 1996 / Survey Manager.
- **Sun Valley Mapping, Sun Valley, ID.** Surveying and aerial mapping required to produce orthophotographic base maps and digital terrain models for 36 square miles of mountain terrain. Study / \$154,000 / 1997 / Survey Manager.
- **Blaine County Survey Control, ID.** Established a survey control network for the County to be used for GIS mapping. Design / \$68,000 / 1999 / Project Manager.

## Personnel Qualifications / Experience

Name/title:  
John Doran

Proposed Duties / Functions:  
Roadway Design

Firm affiliation:  
CH2M HILL

Years of experience: With This Firm 36 With Other Firms 0

Education (Degree, Year, Specialization):  
A.S., 1962, Civil Engineering

Active Registration and/or Professional Licenses:  
Land Surveyor: OR

Specific Qualifications:  
John Doran is senior project manager in CH2M HILL's Civil/Transpiration Engineering Discipline. He specializes in site civil coordination. He provides design and study services for streets, access roads, airports, athletic facilities, dams, and industrial and shopping center developments. John also has a thorough knowledge of surveying, materials, materials testing, and construction procedures.

### Relevant projects:

- **Vansycle Wind Project, Pendleton, OR.** Design of the first commercial wind generation project constructed and operated in the Northwest. The design included 5 miles of tower access roads. Design / \$400,000, design, \$5 million, const. / 1998 / Project Manager, Design Lead.
- **Access Road Experience.** John has designed a number of access roads in remote areas.
  - Access Road, Port of Coos Bay, OR.** Design for the 3.1-mile North Bay access road corridor. Design / \$3 million, const. / 1986 / Design Engineer.
  - PG&E McKinley Grove Road, Fresno, CA.** Responsible for the pavement evaluation and design of the 16-mile Helms Access Road in The Sierra Mountains, Fresno, California. Design / \$3 million, const. / 1985 / Design Engineer.

Name/title:  
Matt Reifer, P.E.

Proposed Duties / Functions:  
Roadway Design

Firm affiliation:  
CH2M HILL

Years of experience: With This Firm 1 With Other Firms 11

Education (Degree, Year, Specialization):  
B.S., 1987, Civil Engineering

Active Registration and/or Professional Licenses:  
Professional Engineer: UT, CA

Specific Qualifications:  
Matt Reifer provides technical leadership in geometric roadway design, drainage design and utility relocations. He is experienced in conceptual, preliminary, final design, and design/build engineering. Matt has been lead design engineer for several roadway projects throughout the country. In this capacity he has been responsible for preparing plans, profiles, details, calculations, specifications, and reports for roadway and drainage improvements.

### Relevant projects:

- **US 95, Worley to Mica, ID.** Environmental study and realignment for 20 miles of highway in northern Idaho. Design / \$3,000,000 / 1999 / Roadway Design.
- **15 Corridor Reconstruction, Salt Lake City, UT.** Design/build of the reconstruction of I-15 through Salt Lake City. Drainage manager for three design sections included 5 miles of I-15 and 1.5 miles of arterial streets. Design / \$2 billion, entire project / 1998 / See above.
- **San Joaquin Hills Transportation Corridor, Orange County, CA.** Design-Build of 19 miles of freeway. Provided utility coordination services. Design/Build / \$ 950,000,000 / 1994 / Project Engineer.

## Personnel Qualifications / Experience

Name/title:  
Margaret (Peg) M. Manuel, AIA

Proposed Duties / Functions:  
Project Architect

Firm affiliation:  
WJA, P.S. Architects / Engineers / Planners

Years of experience: With This Firm 2 With Other Firms 14

Education (Degree, Year, Specialization):  
B.A., 1982, Architecture, State University of New York

Active Registration and/or Professional Licenses:  
1995 / Architecture, State of Washington (# 6691)

### Specific Qualifications:

Peg Manuel has 15 years experience in design and management of many types of projects, including munitions, administrative, housing, educational, recreational, and medical facilities. Having worked extensively with Record Steel and Construction on previous design-build projects at Mountain Home AFB, Peg has developed a strong working relationship with the key personnel at RSCI and at Mountain Home AFB and the USAED, Seattle.

### Relevant projects:

- **Explosive Ordnance Facility, Malmstrom AFB, MT.** A 950 SM facility to conduct classified training, maintenance on equipment, weapons storage, emergency response equipment storage, and administration. Design-Build / \$1,200,000 / 1999 / Project Architect.
- **B1-B Conventional Munitions Shop/Storage Igloos, MHAFB, ID.** Concrete munitions storage igloo of 193 square meters; a 1,065 square meter munitions maintenance facility with bridge crane and site work including roads, vehicle holding pad, parking, and utilities. Design-Build / \$4,600,000 / 2000 / Project Architect.
- **FY99 Dormitory, MHAFB, ID.** New 5,200 SM 140-person dormitory. Design-Build / \$8,790,000 / 2000 / Project Architect.
- **FY98 Dormitory, MHAFB, ID.** New 4,620 SM 140-person dormitory. Design-Build / \$6,980,000 / 1999 / Project Architect.
- **Education Center/Library, Fairchild AFB, WA.** Preparation of Design-Build documents for a 2-story, 4,450 square meter facility consolidating joint uses of classroom learning with library research. \$7,350,000 / 2000 / Project Architect.

Name/title:  
Mark Bowen, P.E.

Proposed Duties / Functions:  
Facilities—Engineering Lead

Firm affiliation:  
CH2M HILL

Years of experience: With This Firm 14 With Other Firms 2

Education (Degree, Year, Specialization):  
M.S., 1984, Structural Engineering  
B.S., 1983, Civil Engineering

Active Registration and/or Professional Licenses:  
Professional Engineer: ID

### Specific Qualifications:

Mark Bowen is the Design and Construction Services Manager for CH2M HILL's Boise office. Mark has been involved primarily in the design of commercial office and retail facilities, and industrial facilities. He has experience with fieldwork associated with these types of structures.

### Relevant projects:

- **St. Luke's Meridian Medical Center Phases 1 and 2, Boise, ID.** This new 250,000-square-foot, four-story center houses same-day surgery facilities and offices. Design / \$413,000, design; \$30 million, const. / 1999 / Project Manager.
- **Building 1333 Conversion, Mountain Home Air Force Base, ID.** Design of conversion of Building 1333 to a radar and aircraft calibration facility—not constructed. Design / \$100,000 / 1997 / Design Manager.
- **West Boise YMCA, Boise, ID.** Project consists of a 91,000-square-foot building, including a 140,000-square-foot parking area. Design / \$150,000 design; \$10 million, const. / 1996 / Project Manager and Lead Structural Designer.
- **St. Luke's Regional Medical Center Expansion Projects, Boise, ID.** Engineering services on several projects, including Surgery, East Wing Tower, Central Services, South Central/Chapel, and Mountain States Tumor Institute (MSTI). Design / \$2.3 million, design; \$60 million, const. / 1999 / Engineering Project Manager.

## Personnel Qualifications / Experience

Name/title:  
Marsha Tanaka, RA

Proposed Duties / Functions:  
Architect

Firm affiliation:  
WJA, P.S. Architects / Engineers / Planners

Years of experience: With This Firm 11 With Other Firms 5

Education (Degree, Year, Specialization):  
M.A., 1983, Architecture, University of Washington  
B.A., 1978, Environmental Design, University of Washington

Active Registration and/or Professional Licenses:  
1986 / Registered Architect, State of Washington

Specific Qualifications:  
Marsha Tanaka brings over 16 years experience in the field of space planning and architectural design. Her work at WJA encompasses a wide range of project types including work for municipal, governmental, industrial and medical clients. Marsha has been responsible for space planning, programming, development of bid and construction documents as well as alterations and renovations to existing structures. Marsha's attention to detail, experience in the design process, and understanding of applicable local, state and federal codes make her a valuable member of our team.

### Relevant projects:

- **ADAL C-141 Flight Training Simulator, McChord AFB, WA.** New 4,000 SF building addition, as well as remodel and alterations to the existing simulator bay into new classrooms and a learning center. Design / \$1,450,000 / 1994 / Project Architect.
- **ADAL KC-135 Flight Training Simulator, Fairchild AFB, WA.** New 14,900 SF building addition, as well as the remodel of an existing 6,200 SF simulator bay and support areas into a new maintenance and training facility. Design / \$3,500,000 / 1996 / Project Architect.
- **Squadron Operations / AMU Facilities, Fairchild AFB, WA and McChord AFB, WA.** Three separate facilities at FAFB and three at MAFB for operations/maintenance management support, briefing/debriefing, flight planning, training, testing, flying/ground safety, mobility office locker rooms, scheduling and tech library. Design / Project Architect.

Name/title:  
Doug Heit, P.E., S.E.

Proposed Duties / Functions:  
Structural Engineer

Firm affiliation:  
WJA, P.S. Architects / Engineers / Planners

Years of experience: With This Firm 5 With Other Firms 4.5

Education (Degree, Year, Specialization):  
B.S., 1990, Civil Engineering, University of Washington

Active Registration and/or Professional Licenses:  
1996, Professional Engineering (Civil), State of Washington  
1998, Professional Engineering (Structural), State of Washington

Specific Qualifications:  
Doug Heit is a Structural Designer at WJA with over nine years of building design experience. His experience includes engineering design for new construction, renovation and seismic retrofit of existing structures, field investigations, structural analysis, and construction phase administration. Doug has engineered a wide variety of building types including government facilities, schools, commercial warehouses, and residential structures. His work at WJA includes many military projects including projects for the U.S. Army Corps of Engineers. Most recently Doug has been Project Structural Engineer for the Whole Barracks Renewal at Fort Lewis, WA.

### Relevant projects:

- **B1-B Conventional Munitions Shop/Storage Igloos, MHAFB, ID.** Concrete munitions storage igloo of 193 square meters; a 1,065 square meter munitions maintenance facility with bridge crane and site work including roads, vehicle holding pad, parking, and utilities. Design-Build / \$4,600,000 / 2000 / Project Structural Engineer.
- **Ground Support Equipment Shop Facility, NAS Whidbey Island, WA.** 4,100 sf of enclosed shop space for vehicle maintenance, bridge crane, hydraulic vehicle lift. Design / \$3,150,000 / 1996 / Project Structural Engineer.
- **ADAL C-141 Flight Training Simulator, McChord AFB, WA.** New 4,000 SF building addition, as well as remodel and alterations to the existing simulator bay into new classrooms and a learning center. Design / \$1,450,000 / 1994 / Project Structural Engineer.

## Personnel Qualifications / Experience

<b>Name/title:</b> Kent Soelberg, P.E.			
<b>Proposed Duties / Functions:</b> Instrumentation and Communication			
<b>Firm affiliation:</b> CH2M HILL			
<b>Years of experience:</b> With This Firm <u>1</u> With Other Firms <u>14</u>			
<b>Education (Degree, Year, Specialization):</b> Master of Engineering Management/Structures, 1984 B.S., 1982, Civil Engineering			
<b>Active Registration and/or Professional Licenses:</b> Structural Engineer: ID			
<b>Specific Qualifications:</b> Kent Soelberg is a structural engineer in CH2M HILL's Design group in Boise. He has 14 years of experience on engineering projects that involve office buildings, government and military facilities, academic and research facilities, and parking structures. He is knowledgeable about governmental agency regulations and procedures as they pertain to design and construction. Kent's experience also includes seismic evaluations and upgrades of buildings.			
<b>Relevant projects:</b> <ul style="list-style-type: none"> <li>• <b>Saint Luke's Regional Medical Center, Meridian, ID.</b> Serves as structural design lead on Phase 3 of St. Luke's Regional Medical Center in Meridian, Idaho, as the campus expands to a full-service medical facility. Design / \$413,000, design; \$30 million, const./ ongoing / Structural Design Lead.</li> <li>• <b>Nursery Bridge Fish Ladder, Milton-Freewater, OR.</b> For the Walla Walla District of the Corps of Engineers, designing a fish ladder on the Walla Walla River. The ladder will contain 2,000 cubic yards of concrete. Design / \$1,200,000 / Ongoing / Lead Structural Engineer.</li> <li>• <b>Boise Airport Parking Garage, Boise ID.</b> Parking garage with four parking levels and a pre-engineered metal roof. Design / \$450,000, design; 11.5 million, const. / 1996 / Lead Structural Engineer.</li> </ul>			

<b>Name/title:</b> Brian E. Moll, PE, SE			
<b>Proposed Duties / Functions:</b> Structural Engineer			
<b>Firm affiliation:</b> WJA, P.S. Architects / Engineers / Planners			
<b>Years of experience:</b> With This Firm <u>8</u> With Other Firms <u>5</u>			
<b>Education (Degree, Year, Specialization):</b> M.S., 1986, Civil Engineering, Arizona State University B.S., 1986, Architecture, Arizona State University B.S., 1983, Civil Engineering, New York University, Suny Buffalo			
<b>Active Registration and/or Professional Licenses:</b> Professional Engineering, States of Washington (1991), Arizona (1989) Structural Engineering, States of Washington (1993), Arizona (1989)			
<b>Specific Qualifications:</b> Brian brings a unique multi-disciplinary background in engineering and architecture for military, civic, industrial, residential, and correctional facilities. He has been responsible for structural analysis, design and detailing in a variety of structural systems involving reinforced concrete, structural steel, reinforced masonry, light gauge framing, wood, etc. Brian is familiar with design requirements for secured facilities and has extensive experience utilizing structural analysis computer programs, including ECOM, ETABS and SAP 90, as well as AutoCAD.			
<b>Relevant projects:</b> <ul style="list-style-type: none"> <li>• <b>ADAL C-141 Flight Training Simulator, McChord AFB, WA.</b> New 4,000 SF building addition, as well as remodel and alterations to the existing simulator bay into new classrooms and a learning center. Design / \$1,450,000 / 1994 / Project Structural Engineer.</li> <li>• <b>ADAL KC-135 Flight Training Simulator, Fairchild AFB, WA / New</b> 14,900 SF building addition, remodel of an existing 6,200 SF simulator bay and support areas into a new maintenance and training facility. Design / \$3,500,000 / 1996 / Project Structural Engineer.</li> <li>• <b>Squadron Operations / AMU Facilities, Fairchild AFB, WA and McChord AFB, WA.</b> Six separate facilities at FAFB and MAFB for operations/maintenance management support, briefing/debriefing, flight planning, training, testing, flying/ground safety. / Project Structural Engineer.</li> </ul>			

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## Personnel Qualifications / Experience

Name/title:  
Larry Fettkether, P.E.

Proposed Duties / Functions:  
Mechanical Engineering

Firm affiliation:  
CH2M HILL

Years of experience: With This Firm 21 With Other Firms 0

Education (Degree, Year, Specialization):  
B.S., 1974, Mechanical Engineering

Active Registration and/or Professional Licenses:  
Professional Engineer: ID, UT

### Specific Qualifications:

Larry Fettkether is a project manager and design engineer in CH2M HILL's Mechanical Engineering discipline. Larry's work involves the preparation of plans and specifications for a variety of mechanical systems, including pump stations and pipelines; chemical handling; building plumbing, heating, ventilating, and air conditioning (HVAC), and fire protection; and compressor and blower installations in commercial, industrial, and municipal applications

### Relevant projects:

- **Ashley Valley Wastewater Treatment Plant, Vernal UT.** HVAC and plumbing design. The building includes offices, a laboratory and a maintenance shop with two bays for vehicles. Design / \$900,000, design; \$4 million, const. / Ongoing / Design Engineer.
- **Kikkoman Foods Plant Design, Folsom CA.** New 40,000-square-foot food processing plant. Major pieces of mechanical equipment were specified, quoted and procured prior to start of construction. Design-Build / \$30 million, const. / 1996 / Lead Mechanical Design.
- **Yakima Herald Printing Plant, Yakima WA.** HVAC system commissioning review for the remodeled newspaper offices and printing plant. The system modifications made in a recently completed remodel were reviewed, a field inspection was done, and changes were recommended to correct operational problems. Design Review / \$5,000 / 1999 / Engineer.

Name/title:  
Eric Schulz, P.E.

Proposed Duties / Functions:  
Electrical Engineering

Firm affiliation:  
CH2M HILL

Years of experience: With This Firm 19 With Other Firms 4

Education (Degree, Year, Specialization):  
M.S., 1980, Electrical Engineering  
B.S., 1976, Electrical Engineering

Active Registration and/or Professional Licenses:  
Professional Engineer: ID, UT, WA, OR, and MT

### Specific Qualifications:

Eric Schulz is responsible for electrical work performed by CH2M HILL's Boise office. His project role has generally been that of project manager or lead electrical engineer. His expertise includes low and medium voltage power distribution studies and design, switchgear, induction and synchronous motor controls, power generation systems, and troubleshooting/consulting on operation of existing facilities. In addition, Eric specializes in all phases of services during construction, including contract administration, shop drawing review, inspection, testing, and startup.

### Relevant projects:

- **Medical Center: St. Luke's Meridian Medical Center, Meridian, ID.** Provided electrical system planning, emergency generation and distribution system sizing and specification, and protective device coordination study. Design / \$413,000, design; \$30 million, const. / 1999 / Lead Electrical Engineer.
- **Base-wide Lighting Evaluation, Mountain Home AFB, Mountain Home, ID.** Served as senior consultant and quality control reviewer. Design / \$15,000 / 1997 / See above.
- **Delamar Mine Vehicle Maintenance Shop, Delamar, ID.** Design and construction of maintenance shop for large mine vehicles. Design and SDC for low-voltage power distribution and lighting for shop and appurtenant facilities, including high bay lighting, bridge crane, and hazardous area features. Design / \$3 million, const. / 1993 / Engineer.

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## Personnel Qualifications / Experience

Name/title:  
Mike Kutz

Proposed Duties / Functions:  
Instrumentation and Communication

Firm affiliation:  
CH2M HILL

Years of experience: With This Firm 9 With Other Firms 14

Education (Degree, Year, Specialization):  
B.S., 1976, Electrical Engineering

Active Registration and/or Professional Licenses:  
Professional Engineer: ID, WA, NM, AZ

Specific Qualifications:  
Mike Kutz is generally the lead or design engineer for projects at CH2M HILL's Boise office. In this capacity, his experience has been broad, having participated in a variety of institutional, industrial, municipal, and commercial projects. Areas of technical expertise include: primary and secondary power distribution, lighting, isolated power systems (medical), fire protection and alarms, communications (including telephone, paging, and intercom), security, grounding, lightning protection, and other special electrical systems. Mike also specializes in all phases of service during construction, including contract administration, shop drawing review, construction observation, testing, and troubleshooting.

### Relevant projects:

- **Saint Luke's Regional Medical Center, Meridian, ID.** Power distribution, fire alarm, and communications systems design for a new four-story medical office building, including an emergency power intertie. Design / \$413,000, design, \$30 million, const. / 1999 / Design Engineer.
- **West Boise YMCA, Boise, ID.** Design of a new facility. Designed electrical supply, communication, fire alarm, emergency lighting, site lighting, and communications systems. Design / \$150,000, design, \$10 million, const./ 1996 / Design Engineer.
- **West Boise Wastewater Treatment Plant, Boise, ID.** Expansion of the treatment plant that included I&C. Designed a Programmable Logic Controller for the plant. Design and CM / \$4.2 million, design; \$37 million, const. (entire project) / Ongoing / Design Engineer.

Name/title:  
Mike Lavey

Proposed Duties / Functions:  
Site Civil Engineering

Firm affiliation:  
CH2M HILL

Years of experience: With This Firm 22 With Other Firms 0

Education (Degree, Year, Specialization):  
A.S., 1971, Drafting and Design

Active Registration and/or Professional Licenses:  
Professional Land Surveyor: Idaho  
Certified Engineering Technician

Specific Qualifications:  
Mike Lavey is a senior civil engineering design technician in CH2M HILL's Design and Construction Group. He has participated in numerous land development projects, civil engineering projects ranging from site design of wastewater and water treatment plants, reservoirs, and site design for major retailers. Mike is active in the planning, design, and services during construction on a wide variety of civil works projects and infrastructure and utility projects. He has developed a special expertise in dealing with the development of utility systems at remote sites.

### Relevant projects:

- **Hat Point Interpretive Center, Hells Canyon NRA, OR.** Award-winning project for the design of three interpretive recreation sites and one overnight camping facility in a remote area. Design-Build / \$1,500,000 / 1993 / Project Manager.
- **Woodhead Park, Hells Canyon, ID.** For Idaho Power Company, this project uses water distribution, underground power distribution, sanitary sewerage collection, and conveyance using gravity and pressure piping. Design and SDC / \$450,000, design; \$7.5 million, const. / 1994 / Design Engineer.
- **Hewlett-Packard, Boise, ID.** Designed the site civil modifications necessary for the construction of the anechoic chamber building. Design / \$25,000, design / 1999 / Design Engineer.
- **Hidden Hollow Landfill, Ada County, ID.** Designed gravel access road and erosion control. (Design / \$240,000 (design) / 1996 / Designer.

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## Personnel Qualifications / Experience

Name/title:  
Bruce Johnson, ASLA

Proposed Duties / Functions:  
Landscape Architect

Firm affiliation:  
WJA, P.S. Architects / Engineers / Planners

Years of experience: With This Firm 4 With Other Firms 20

Education (Degree, Year, Specialization):  
B.L.A., 1974, Landscape Architecture, University of Washington

Active Registration and/or Professional Licenses:  
1976 / Landscape Architecture, State of Washington

**Specific Qualifications:**  
Bruce Johnson brings over 20 years of experience to the disciplines of landscape architecture and planning. Prior to joining WJA, Bruce was principal of his own firm that focused on urban and suburban housing, renovation work, recreation and site planning. Renovation projects have varied from historical preservation to housing and institutional renovation. Sensitively integrating new work with existing conditions has been an achieved goal for Bruce in all types of projects, including industrial facilities, business parks, housing, recreational facilities, medical establishments, and institutional projects. Bruce's experience with governmental projects has included the Design/Build Dormitories at Mt. Home AFB, the Squadron Operations Facility and the C-17 Maintenance Training Facility at McChord.

### Relevant projects:

- **C-17 Maintenance Training Facility, McChord AFB, WA.** Design and preparation of plans and specifications for a 3,190 SM facility with classrooms and simulator rooms for providing hands-on C-17 maintenance instructions. Design / \$5,685,000 / 1997 / Landscape Architect.
- **Squadron Operations / AMU Facilities, Fairchild AFB, WA.** and McChord AFB, WA. (3) separate facilities at FAFB and (3) at MAFB for operations/maintenance management support, briefing/ debriefing, flight planning, training, testing, flying/ground safety, mobility office locker rooms, scheduling and tech library. Design / Landscape Architect.
- **FY99 Dormitory, MHAFB, ID.** New 5,200 SM 140-person dormitory. Design-Build / \$8,790,000 / 2000 / Landscape Architect.
- **FY98 Dormitory, MHAFB, ID.** New 4,620 SM 140-person dormitory. Design-Build / \$6,980,000 / 1999 / Landscape Architect.

Name/title:  
Donald C. Moeller, P.E., Engineering Manager

Proposed Duties / Functions:  
Fire Protection Engineer

Firm affiliation:  
Rolf Jensen & Associates, Inc.

Years of experience: With This Firm 12 With Other Firms 2

Education (Degree, Year, Specialization):  
B.S., 1987, Mechanical Engineering, B.S., 1987, Agricultural Engineering  
B.S., 1996, Business Management

Active Registration and/or Professional Licenses:  
1991, Mechanical/CA, 1992/Fire Protection/OR, 1993, Fire Protection Engineering/CA

**Specific Qualifications:**  
Mr. Moeller is the Engineering Manager for Rolf Jensen & Associates (RJA) San Francisco area office. His experience has included design of fire alarm, automatic sprinkler and special suppression systems, and fire protection and building code consulting. The diversity of his background enables him to coordinate various disciplines involved with fire protection issues. Mr. Moeller has reviewed facilities and systems with respect to operational needs, military, government, state and local and historic building and fire codes. Mr. Moeller has served as an alternate for the committees developing NFPA 231 and 231c dealing with storage occupancies. He is currently the principal member of the NFPA 13 committee for Hanging and Bracing of Water Based Fire Protection Systems.

### Relevant projects:

- **VA Medical Replacement Medical Center, Travis AFB, CA**
- **Elmendorf Air Force Base Hospital, Anchorage, AK**
- **White City VA Medical Center, White City, OR**
- **Presidio, Lair Facility - Task Order 45, Presidio, CA**
- **Seal Beach Survey, San Diego, CA**
- **NCC & OSC Survey, San Diego, CA**
- **China Lake Naval Air Station, China Lake, CA**
- **U.S. Navy - FISC & Defense Depot Surveys, San Diego, CA**
- **MCLB Barstow Base Survey, Barstow, CA**
- **MCAS 29 Palms Base Survey, Twenty-nine Palms, CA**
- **MCAS Miramar Survey, Miramar, CA**

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## Personnel Qualifications / Experience

<b>Name/Title:</b> John Henderson			
<b>Proposed Duties / Functions:</b> On-Site Project Manager			
<b>Firm affiliation:</b> RSCI			
<b>Years of experience:</b> With This Firm <u>5</u> With Other Firms <u>15</u>			
<b>Education (Degree, Year, Specialization):</b> Bachelor of Science, 1984, Construction Management			
<b>Active Registration and/or Professional Licenses:</b> Registered CM, 1998, CM-124			
<b>Specific Qualifications:</b> John serves as the Senior Project Manager for RSCI. John has over 15 years of experience in construction project engineering, supervision and management on a variety of commercial, institutional, industrial and multi-family residential projects. John's skills encompass all phases of project management including development of contract documents, estimating, permits acquisition, scheduling, submittals, contracts, job site safety programs, subcontractor relations, cost reporting and analysis, project close out and warranties.			
<b>Relevant projects:</b>			
<ul style="list-style-type: none"> <li><b>FY99 Dormitory, MHAFB, ID.</b> New 5200 SM, 140-person dormitory. Design-Build / \$8.79M / 2000 / Project Manager.</li> <li><b>FY98 Dormitory, MHAFB, ID.</b> New 4620 SM, 140-person dormitory. Design-Build / \$6.98M / 1999 / Senior Program Manager.</li> <li><b>Ivy Wild Pool, Boise, ID.</b> Swimming pool facility with mechanical and dressing room buildings and parking lot. Construction / \$1.65M / 1998 / Project Manager.</li> <li><b>Snake River Correctional Institute, Ontario, OR.</b> Cast in place concrete and precast concrete erection as subcontractor on a \$140,000,000 Oregon D.O.C. prison project. Construction / \$10M / 1997 / Project Manager.</li> <li><b>1995 Dormitory, MHAFB, ID.</b> Three story, 45,000 sf, 140 unit barracks. Construction / \$4.1M / 1996 / Project Manager.</li> </ul>			

<b>Name/Title:</b> Ed Sloan			
<b>Proposed Duties / Functions:</b> Roads and Utilities—Superintendent			
<b>Firm affiliation:</b> CH2M HILL Constructors, Inc. (CCI)			
<b>Years of experience:</b> With This Firm <u>17</u> With Other Firms <u>12</u>			
<b>Education (Degree, Year, Specialization):</b> B.S., 1978, Construction Engineering Management A.A., 1972, Civil Engineering Tech			
<b>Active Registration and/or Professional Licenses:</b> Licensed Construction Manager, Idaho CM-122 Licensed Specialty Contractor, Idaho Public Works			
<b>Specific Qualifications:</b> Ed Sloan is a Senior Construction Manager and Superintendent in CH2M HILL's Boise, Idaho, office. He is involved in the management, coordination, and quality control of construction projects in Idaho. Project responsibilities include scheduling, cost estimating, constructibility reviews, value engineering, contract administration, design review, and quality control. Ed's primary focus is on leading construction teams to provide clients with effective management that results in successful, quality projects being completed on time and under budget. He has extensive experience in all phases of civil and road construction, including erosion control, utilities, excavation, crushing and road construction as a laborer, equipment operator, foreman, superintendent, and project and construction manager.			

### Relevant projects:

- HDPE Liner Repair, Montana Power, Costrip, MT.** Design-build repair of the HDPE liner in a 200-acre evaporation pond for Montana Power. Design-Build / \$1,000,000 / 1998 / Superintendent.
- Delamar Silver Mine, Owyhee County, ID.** Construction of a heap leach gold recovery facility including roadways and erosion control. Design / \$500,000, design; \$20 million, const. / 1993 / CM and Supt.
- Hat Point, Hells Canyon, OR.** Design-build project on which he provided roadway and park planning, constructibility, civil layout, and cost estimating. Design-build / \$1,500,000 / 1993 / See above.

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## Personnel Qualifications / Experience

Name/title:  
Mike Salyer

Proposed Duties / Functions:  
Project Superintendent

Firm affiliation:  
RSCI

Years of experience: With This Firm 10 With Other Firms 16

Education (Degree, Year, Specialization):

Active Registration and/or Professional Licenses:

### Specific Qualifications:

Mike has more than 16 years of experience in residential and commercial construction. In the past 4 years, Mike has been managing and negotiating government projects for the Idaho Air National Guard. Mike has a deep loyalty towards the client and RSCI, with integrity that is second to none.

### Relevant projects:

- **Mobilization Readiness Center, Gowen Field, Boise, ID.** Complete renovation, interior and exterior reroof, and a second story addition to the existing facility with a new adjacent 3 story office complex. Construction / \$3,236,770 / 1999 / Project Superintendent.
- **Upgrade Aircraft Maintenance Hangar, Gowen Field, Boise, ID.** Upgrade existing 61,000 sf aircraft hangar including asbestos and lead abatement, replacement of mechanical and electrical systems and modification of fire protection system and interior finishes. Construction / \$3,934,675 / 1998 / Project Superintendent.
- **Interim C-130 Maintenance Facility, Gowen Field, Boise, ID.** C-130 hangar enclosure. Design criteria for removable building type. Mass site excavation was required. Construction / \$1,199,527 / 1997 / Project Superintendent.
- **Fire Station, Gowen Field, Boise, ID.** Single story 16,000 sf, 4-bay fire station. CMU with brick veneer, concrete floors, concrete paving, landscaping, locker rooms and kitchen for personnel. Construction / \$1,420,000 / 1995 / Project Superintendent.

Name/title:  
Tom Haislip

Proposed Duties / Functions:  
Environmental Compliance

Firm affiliation:  
CH2M HILL

Years of experience: With This Firm 20 With Other Firms 13

Education (Degree, Year, Specialization):  
M.S., 1968, Ecology  
B.S., 1965, Zoology

Active Registration and/or Professional Licenses:

### Specific Qualifications:

Tom Haislip is an experienced manager of projects involving environmental assessment or monitoring for industrial, governmental, and utility clients. His experience includes field data collection, technical analysis, impact assessment, development of mitigation measures, report preparation, and negotiation with regulatory agencies. From this experience Tom has developed a broad understanding of environmental issues, interest group motivations, institutional and political pressures, and problem-solving methodologies.

### Relevant projects:

- **Plum Creek Habitat Conservation Plan.** EIS and Habitat Conservation Plan for Plum Creek Timber Company's lands in Montana, Idaho, and Washington. EIS / \$700,000 / Ongoing / Project Manager.
- **Interior Columbia Basin Ecosystem Project.** Provided input to the ICBEMP and made presentations on behalf of Boise Cascade Corporation. Study / 1998 / \$2,200,000 / Project Manager.
- **Uintah Basin Replacement Project EIS, UT.** EIS for a wide-ranging water resource system of storage dams, diversion structures, canals, pipelines, and environmental enhancements. EIS / \$6,000,000 / 1999 / Project Manager.
- **Orchard Training Area EIS, Boise, ID.** Draft EIS for an upgrade to the training range. EIS / \$200,000 / 1992 / Project Manager.

## Personnel Qualifications / Experience

Name/title:  
Gina Knudson

Proposed Duties / Functions:  
Community Relations

Firm affiliation:  
CH2M HILL

Years of experience: With This Firm 0.5 With Other Firms 9

Education (Degree, Year, Specialization):  
B.A., 1990, Journalism

Active Registration and/or Professional Licenses:

### Specific Qualifications:

Gina Knudson is a Technical Publications Specialist in the CH2M HILL Boise, Idaho, office. She is an experienced editor and technical writer with a background in environmental public affairs and journalism. While employed with the United States Air Force (USAF), she coordinated public involvement strategies for large- and small-scale environmental projects. Gina has successfully implemented risk communication techniques on a variety of projects, including the USAF's Enhanced Training in Idaho (ETI) project and Mountain Home Air Force Base's Superfund community involvement program.

### Relevant projects:

- **Enhanced Training Range Public Affairs, Mountain Home AFB, ID.** While at Mountain Home Air Force Base, coordinated all public affairs activities associated with the USAF's Enhanced Training in Idaho project. Designed a public affairs management plan that met NEPA and USAF requirements, prepared press releases, responded to media queries, wrote articles for and edited a series of newsletters, and edited the Draft Environmental Impact Statement (DEIS).
- **B-1B Beddown Project, Mountain Home AFB, ID.** While at Mountain Home Air Force Base, was the Air Force's lead public affairs officer for this project. She created a public affairs management plan, identified key communities and groups needing to be included in public involvement efforts, wrote speeches presented by senior Air Force officials, responded to media queries, and edited sections of the B-1B Environmental Assessment (EA).

Name/title:  
Alejandro Gonzalez

Proposed Duties / Functions:  
Construction QA/QC Backup

Firm affiliation:  
RSCI

Years of experience: With This Firm 3 With Other Firms 9

Education (Degree, Year, Specialization):  
University Iberoamericana, Civil Engineer, Torreon, Coah., Mexico - 1993  
QC Program, Corps of Engineers, Seattle, WA - 1998

Active Registration and/or Professional Licenses:

### Specific Qualifications:

Alejandro has over 4 years of experience in management and scheduling, cost control, updating blueprints/specification documentation, estimating, and change orders. He also maintains and records drawing data, change order logs and submittals. Alejandro is certified for Quality Control with the Army Corps of Engineers, Seattle, WA.

### Relevant projects:

- **FY98 Design Build Dorm, Mountain Home AFB, ID.** New 5200 SM, 140-person dormitory. Design-Build / \$7,300,000 / 1999 / Quality Control Manager.
- **Pierce Park Elementary School Remodel, Boise, ID.** Remodel of elementary school / \$340,000 / 1998 / Project Manager.
- **Seven AT&T Buildings, Juarez, Chihuahua, Torreon, Saltillo, Zacatecas, Leon, and Celaya, Mexico.** Construction of new facilities / \$2,000,000 / 1997 / Field Engineer and Controller.
- **Organization Tres Mosqueteros, Torreon, Mexico.** Restoration of 6,300 sf restaurant and bar. \$100,000 / 1995 / Project Manager.

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<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>				1. CONTRACT ID CODE		PAGE OF PAGES 1 2	
2. AMENDMENT/MODIFICATION NO. <div style="text-align: center;">R00006</div>		3. EFFECTIVE DATE <div style="text-align: center;">02/11/2000</div>		4. REQUISITION/PURCHASE REQ. NO. <div style="text-align: center;">W68MD9-9217-5295</div>		5. PROJECT NO. (If applicable)	
6. ISSUED BY <div style="text-align: center;">US ARMY ENGINEER DISTRICT, SEATTLE PO BOX 3755 SEATTLE WA 98124-3755  Mary E Mitton</div>		CODE <div style="text-align: center;">W68MD9</div>		7. ADMINISTERED BY (If other than Item 6)		CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) Vendor ID: 00000000				(X)		9A. AMENDMENT OF SOLICITATION NO. <div style="text-align: center;">DACA67-00-R-0001</div>	
				X		9B. DATED (SEE ITEM 11) <div style="text-align: center;">11/19/99</div>	
						10A. MODIFICATION OF CONTRACT/ORDER NO.	
						10B. DATED (SEE ITEM 13)	
CODE <div style="text-align: center;">00000</div>		FACILITY CODE					
<b>11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS</b>							
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers <input checked="" type="checkbox"/> is extended, <input type="checkbox"/> is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) <del>By completing Items 9 and 15, and returning _____ copies of the amendment;</del> (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.							
12. ACCOUNTING AND APPROPRIATION DATA (If required)							
<b>13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.</b>							
(X)		A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.					
		B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103 (b).					
		C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:					
		D. OTHER (Specify type of modification and authority)					
<b>E. IMPORTANT:</b> Contractor <input checked="" type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)							
RFP No. DACA67-00-R-0001, Design-Build: ETI Phase II, Mountain Home AFB, ID							
<p>Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.</p>							
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)			
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA		16C. DATE SIGNED	
(Signature of person authorized to sign)				BY (Signature of Contracting Officer)			

A. This amendment is issued to provide for the revisions to the solicitation listed below.

B. Section 00010, Schedule page 00010-5 is revised to clarify what is to be included in the proposed prices for Optional Items 0008, 0009, and 0010. The revised line items read as follows:

0008 All Work for Design and Construction of ETI  
Phase III Sites Except for Optional Items 0009 and 0010

0009 All Work for Design and Construction of  
Alternative Septic Systems at One 1-Acre Site  
(For Areas of Shallow Rock Depth)

0010 All Work for Design and Construction of  
Alternative Septic Systems at One Additional  
1-Acre Site (For Areas of Shallow Rock Depth)

C. Section 01025, Payment, is revised to match the changes in the pricing schedule.

D. DUE DATE AND TIME for second final proposal revision are at 3:00 p.m., Local Time, 17 February 2000.

E. Offerors must acknowledge receipt of this amendment by number and date on page 00010-2, in Block 19 or by telegram.

Enclosures:

Revised Schedule pages 00010-5 and 00010-5a

Revised Section 01025 pages 01025-1 thru 01025-4

## AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE

PAGE OF PAGES

1 2

2. AMENDMENT/MODIFICATION NO.

3. EFFECTIVE DATE

4. REQUISITION/PURCHASE REQ. NO.

5. PROJECT NO. (If applicable)

R0005

02/03/2000

W68MD9-9217-5295

6. ISSUED BY

CODE

W68MD9

7. ADMINISTERED BY (If other than Item 6)

CODE

US ARMY ENGINEER DISTRICT, SEATTLE

PO BOX 3755

SEATTLE WA 98124-3755

Mary E Mitton

C12 (206) 764-6806

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) Vendor ID: 00000000

(X)

9A. AMENDMENT OF SOLICITATION NO.

DACA67-00-R-0001

X

9B. DATED (SEE ITEM 11)

11/19/99

10A. MODIFICATION OF CONTRACT/ORDER NO.

10B. DATED (SEE ITEM 13)

CODE 00000

FACILITY CODE

## 11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

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12. ACCOUNTING AND APPROPRIATION DATA (If required)

## 13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(X)

A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103 (b).

C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor ☒ is not, ☐ is required to sign this document and return \_\_\_\_\_ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

RFP No. DACA67-00-R-0001, Design-Build:

ETI Phase II, Mountain Home AFB, ID

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)

16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)

15B. CONTRACTOR/OFFEROR

15C. DATE SIGNED

16B. UNITED STATES OF AMERICA

16C. DATE SIGNED

(Signature of person authorized to sign)

BY

(Signature of Contracting Officer)

A. This amendment is issued to provide for the revisions to the solicitation listed below.

B. Section 00810-3, Design Review Addresses and Distribution, will be revised to show the 20 copies no longer going to LTC Lanhman, but to the following address: "366 CES/CECO, 1030 Liberator Street, Mt. Home AFB, ID 83648-5442, Attn: Rich Hedrick."

C. Section 00860-II, Statement of Work - Part II, is revised as follows:

a. 00860-II-3, para. (c), will be changed to add the following sentence: "If berming of material is required at the Maintenance Complex, it shall be outside the fenced area to maximize use of the fenced maintenance complex area."

b. 00860-II-5, para. (e), the water storage tank criterion will be changed to specify a ground-mounted 10-ft. radius by 30-ft. tall water storage tank.

c. 00860-II-6, para. (j), will be changed to have the contractor provide and install bird deterrent balls on the 1-acre pond.

d. 00860-II-7, para. (f), will be changed to add the following sentence: "The drain field at the Maintenance Complex shall be outside of the fenced area in a location similar to that shown on Drawing C-10."

e. 00860-II-10, para. 3.2.2.4, will be revised to have the contractor supply and install the antenna at all 1-acre sites.

f. 00860-II-11, para. 3.2.2.7, The sentence that begins "The railroad track will be constructed of untreated wood ties," will be revised to add "(4 inches by 8 inches)" after the word ties.

D. DUE DATE AND TIME for final proposal revision are at 3:00 p.m., Local Time, 9 February 2000.

E. Offerors must acknowledge receipt of this amendment by number and date on page 00010-2, in Block 19 or by telegram.

Enclosures:

Revised Sections 008100 and 00860-II



## AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE

PAGE OF PAGES

1 2

2. AMENDMENT/MODIFICATION NO.

3. EFFECTIVE DATE

4. REQUISITION/PURCHASE REQ. NO.

5. PROJECT NO. (If applicable)

R0004

01/03/00

W68MD9-9217-5295

6. ISSUED BY

CODE

W68MD9

7. ADMINISTERED BY (If other than Item 6)

CODE

US ARMY ENGINEER DISTRICT, SEATTLE

PO BOX 3755

SEATTLE WA 98124-3755

Mary E Mitton

C12 (206) 764-6806

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) Vendor ID: 00000000

(X)

9A. AMENDMENT OF SOLICITATION NO.

DACA67-00-R-0001

X

9B. DATED (SEE ITEM 11)

11/19/99

10A. MODIFICATION OF CONTRACT/ORDER NO.

10B. DATED (SEE ITEM 13)

CODE 00000

FACILITY CODE

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C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor ☒ is not, ☐ is required to sign this document and return \_\_\_\_\_ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

RFP No. DACA67-00-R-0001, Design-Build:

ETI Phase II, Mountain Home AFB, ID

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15A. NAME AND TITLE OF SIGNER (Type or print)

16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)

15B. CONTRACTOR/OFFEROR

15C. DATE SIGNED

16B. UNITED STATES OF AMERICA

16C. DATE SIGNED

(Signature of person authorized to sign)

BY

(Signature of Contracting Officer)

A. This amendment is issued to provide for the revisions to the solicitation listed below.

B. Section 00700, Contract Clauses, is revised to delete clause 52.232-24, Prohibition of Assignment of Claims.

C. Revisions to Section 00860-II, as follows:

1. Paragraph 3.1.3(4)(j): The second and third sentences are revised to delete remaining references to pond design. These sentences are revised to read as follows: "The D/B Contractor shall design the entire distribution system including but not limited to the intake system, filtration, piping, valves, and appurtenances. The D/B Contractor shall provide the Contracting Officer with the design of the intake system, filtration system, valves, and 30 m (100 feet) of 305 mm (12-inch) water pipe materials at the pond for others to install. The D/B Contractor shall furnish and install approximately 884 m (2900 feet) of 305 mm (12-inch) water pipe material from the pond to the Clover Three Creek Road."

2. Paragraph 3.4.4(1)(c): The first sentence is revised to emphasize that each heater shall be able to heat a 3' x 3' area of building surface. The sentence is revised to read as follows: "Propane-fired radiant heaters shall be installed per concept details on architectural drawings and positioned so that each heater maintains a small portion (0.9m x 0.9m [3 ft. x 3 ft.]) of the building shell 1.2oC (2o F) above the surrounding metal surface temperature."

D. Proposal DUE DATE AND TIME remain unchanged at 3:00 p.m., Local Time, 10 January 2000.

E. Offerors must acknowledge receipt of this amendment by number and date on page 00010-2, in Block 19 or by telegram.

Enclosures:

Revised Sections 00700 and 00860-II

<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>				1. CONTRACT ID CODE		PAGE OF PAGES 1 5	
2. AMENDMENT/MODIFICATION NO.  R0003		3. EFFECTIVE DATE  12/22/99		4. REQUISITION/PURCHASE REQ. NO.  W68MD9-9217-5295		5. PROJECT NO. (If applicable)	
6. ISSUED BY  US ARMY ENGINEER DISTRICT, SEATTLE PO BOX 3755 SEATTLE WA 98124-3755  Mary E Mitton		CODE  W68MD9  C12 (206) 764-6806		7. ADMINISTERED BY (If other than Item 6)		CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) Vendor ID: 00000000				(X)		9A. AMENDMENT OF SOLICITATION NO.  DACA67-00-R-0001	
				X		9B. DATED (SEE ITEM 11)  11/19/99	
						10A. MODIFICATION OF CONTRACT/ORDER NO.	
						10B. DATED (SEE ITEM 13)	
CODE 00000		FACILITY CODE					
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<b>E. IMPORTANT:</b> Contractor <input checked="" type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)							
RPP No. DACA67-00-R-0001, Design-Build: ETI Phase II, Mountain Home AFB, ID  see attached pages							
Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.							
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15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA		16C. DATE SIGNED	
(Signature of person authorized to sign)				BY _____		(Signature of Contracting Officer)	
NSN 7540-01-152-8070 PREVIOUS EDITION UNUSABLE				30-105			
				<b>STANDARD FORM 30 (REV. 10-83)</b> Prescribed by GSA FAR (48 CFR) 53.243			

A. This amendment is issued to provide for the revisions to the solicitation listed below.

B. Section 00800, Special Clauses, is revised as follows:

1. SC-1, COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK, is revised to show completion as follows:

WORK ITEM	TIME FOR COMPLETION
All work except Optional Item 0008	570 calendar days after date of receipt by Contractor of notice to proceed with design of project
All work for Optional Item 0008	360 calendar days after date of receipt by Contractor of notice to proceed with design for this work

2. SC-1.1, OPTION FOR INCREASED QUANTITY, is revised to delete paragraph c, which discussed completion of optional items.

3. Revisions to drawings by notation are made as follows:

- a. Drawing, Sheet G-3: Add note to read: "The new access roads and existing roads are identified and labeled with the type of improvements on the succeeding drawings. The limits of roadway improvements are shown on the drawings and described in the legal descriptions
- b. Drawing, Sheet A-1: Revise Sheet Note 28 to read "Duplex Vertical Compressor (2), 5 HP."
- c. Drawing, Sheet A-6: Revise Detail 6 to refer to Section 00860-II for grounding of fencing.
- d. Drawing, Sheet C-6: Revise Road AM to indicate substantial improvements.
- e. Drawing, Sheet C-7, C-8, C-9, C-10, C-12, C-13, C-14, C-15, C-16, and C-17: Delete the note "Retain all storm water on-site and provide centralized drain system."
- f. Drawing, Sheet C-14: At Grid location G-1, revise note to read "BLM style fencing."
- g. Drawing, Sheet C-18: Delete the detail titled "Typical 'Some' Improvement Road Section."

C. Revisions to Section 00860-II, as follows:

1. Para. 3.2.2.12, Fuels and Storage Tanks, last sentence reads "Minimum gas pressure required at each propane heater is 11" W.C."

2. Para. 3.3.1, Structural Design, subpara. 2 is revised to read "2. Seismic Design Requirement: Structural design shall be in accordance with the provision TI 809-04 Seismic Design for Buildings, dated Dec. 1999. The lateral analysis and design will also include loading placed on exterior walls by drifted snow. Wind and snow design and analysis shall be in accordance with ASCE 7-95."

3. Para. 3.4.4, Heating, Ventilation and Air Conditioning, subpara. 1c is revised to read:

"c. No Drop 5 Acre Industrial Site ND4: N/A

Propane-fired radiant heaters shall be installed per concept details on architectural drawings and positioned to maintain a small portion (0.9m x 0.9m [3 ft. x 3 ft.]) of the building shell 1.2oC (2oF) above the surrounding metal surface temperature. It is not required to limit the heated surface area. The temperature differential shall be indicated locally for reading by surface mounted thermometers, one mounted outside the building in the direct path of radiation, the other mounted loft to either side. One pair of thermometers is required per building. Heaters shall be equivalent to a "Hot Stuff" heater, Model No. MH25LP as manufactured by the Mr. Heater Corporation, (216) 881-5500. The heaters shall have a single heat output of 6.4 kW (22,000 BTU/hr), and be manually activated without temperature control or electricity."

4. Para. 3.4.5, Gas Piping, para. 3, No Drop Site 5 Acre Industrial Site ND4, para. 4, No Drop site 5 Acre Industrial Site ND5, and para. 5, No Drop Early Warning Site ND7: see miscellaneous revisions.

5. Para. 3.4.13, Fire Protection Sprinkler System, is revised to state "...The system shall be served by the 70,000 gallon above ground storage tank..."

6. Para. 3.5.4.6, 1 Acre Emitter Site Complex, is revised to add the following sentence: "Provide a ground reference point that has a maximum of 15 ohms resistance to ground at each mobile emitter hookup location."

D. Revisions to Outline Specifications (00890) at the reference to Section 16264, Propane-Generator Set, Stationary 15-300 KW, Standby Applications, the first sentence is revised to read "Propane generator sets, stationary 125kW, which are suitable for serving general purpose and commercial loads."

E. INQUIRIES FROM OFFERORS, WITH RESPONSES:

1. Q. What is the number of people anticipated to occupy the maintenance building?

A. The answer to this question has been found in the Final EIS, Page 2-43 and 2-49.

2. Q. Can the floor plans of the maintenance and industrial site buildings be modified?

A. The AF does not expect or desire changes to the floor plan. There may be some adjustments needed for Mechanical Room space or overall Life Safety and/or standard building codes, but these types of adjustments should be minor in nature.

3. Q. Can the organization of the buildings on the maintenance facility and industrial site plans be modified?

A. Changes to the building organization are not desired. The industrial site has been laid out with specific consideration given to visual appearance from the air.

4. Q. Does the Corps or the Air Force have the locations of Archeological Monuments, sensitive areas of sagebrush, sage grouse leks, slickspot peppergrass, playas, and other significant species documented on drawings for the project area? If so, will the GIS coordinates be provided to bidders for preparation of their proposals?

A. There are no leks on the actual construction sites, just in close proximity (outside Rights of Way). The GIS coverages in the bit map provided under separate cover indicate playas with and without peppergrass at JBR. The only other playa near planned construction is immediately adjacent to the road to site AM, and there is no map for that one. This site will require avoidance treatment as stipulated in the RFP mitigation plan and the section 01061. Known archeological sites are present at JBR, but are at least 1 mile away from all planned construction. There are no known archeological sites at any of the other ETI locations. Contractors should be prepared for unanticipated discoveries in accordance with Section 1061.

5. Q. There does not appear to be any mention of Cathodic Protection. There is a considerable amount of gas and water piping. I would think from past projects that Cathodic Protection would be required.

A. Gas and water piping shall be wrapped. Cathodic protection not required. All buried metallic piping used for gas and water shall be installed with thermoplastic resin protective coating. The Contractor shall provide protection against corrosion as necessary based on the selected material and the Ground Resistance Testing data provided in Appendix E.

6. Q. RFP 00860-II-45 last sentence on page states: "Provide lightning protection grounding on all metal buildings, fuel tanks and Communications Towers." This statement is under 3.5.4.3 Maintenance Complex. Is the lightning protection statement intended for just the Maintenance Complex or do all metal buildings in the project require lightning protection?

A. No. Only maintenance complex and one-acre emitter sites. See 3.5.4.6.

7. Q. Section 00860-II-28, Item B, and 00860-II-29, Item C, state that a portion of the building wall shall be maintained at 2 degrees F. above the surrounding sheet metal surface. Is this a minimum, or is there a tolerance on the 2 degrees?

A. This is a small difference and may require sophisticated controls depending on the requirements.

8. Q. Is the specified elevation given for the industrial a hard elevation or can the Contractor deviate from this elevation?

A. Bids should be based on information shown in the RFP package.

9. Q. In Guide Specification 02506 the "surface of the top layer shall not deviate more than 3/4" in 10 feet". This does not seem reasonable with the intent of the civil design to minimize surface grading and site impacts. Can you provide additional insight into grade control?

A. The tolerance specification is standard to the industry.

10. Q. In Section 3.1.3 (5), Page 00860-II-7 "the allowable variation of not more than 1/2" per 100 feet" is stipulated. Idaho allows the installation of drain field piping to follow the contour? This should be the case for these installations.

A. Install the sanitary pipe in accordance with Section 00960.3.1.3, paragraph (5)(c).

11. Q. In Section 3.1.3 (3), Page 00860-II-5, Article h there is a discussion about "assuming 3 people each use up to (20 gallons) per day". The intent of this discussion seems to be either a justification of sizing the tank at 6,000 gallons and having a 100 day supply on hand, or it is setting design criteria for consumption and waste flows for each individual. Which, if either, is the case?

A. The intent of the occupancy is to size the 6,000 gallon storage reservoir.

12. Q. In Section 3.1.3 (4), Page 00860-II-5, Article, c, there is a discussion about "The minimum size of water mains shall be 6-inch. Larger size water main will be required if necessary to meet the minimum residual pressure requirements". What are the residual pressure requirements?

A. Pressure requirements are whatever is required by the building.

13. Q. Is the Contractor to provide the "Electrical Transformer Building" Note 9 Sheet A-3? If so, is it similar to the Electrical Distribution Building Details 11 & 12 Sheet A-6.1? What is the timing of the transformer "By Others" that this building will house?

A. Contractor to provide transformer buildings and distribution buildings. See Sheet E-3 and 3.5.4.1. The IPCO contract is scheduled to be complete by September 2000. No further interim commitments are known.

14. Q. 00860-II-23, 3.3.1-6. Roof snow load is listed as 100 psf. This seems unusually high for this area. Is this intended to strengthen the structure for impact during training?

A. This is the required roof snow load for the area (Owyhee County). Strengthening is in addition to snow load.

15. Q. Please clarify what staking and surveying will be provided by the ACOE.

A. Base Environmental shop will stake sensitive areas along roadways to be constructed or site locations at the time of the pre-condition survey.

16. Q. Civil work being performed under this RFP will occur in several jurisdictions, Federal, State and County. Section 00860\_1-3, 2.2 does not specifically mention what codes are to be followed for the civil design on items such as roadways, site grading, drainage and water systems. Clarify which codes apply.

A. The civil design elements shall meet the intent of the 30 percent preliminary design and adhere to good engineering practices and judgment. The civil design elements shall also meet the special conditions in all agreements and permits applicable to the project.

17. Q. Building construction being performed under this RFP will occur in several jurisdictions. Section 00860\_1-5, 2.2.4 refers to "local codes & ordinances", but does not specifically name State, County or City. Please clarify which will apply to the work being performed under RFP.

A. Buildings shall be in compliance with applicable codes listed in 00860-1.

18. Q. Please identify how to connect the two roads shown for the FEBA Drop sites.

A. Provide access road along the southern boundary of the northernmost FEBA site.

19. Q. Will ACOE be providing Topographical drawings for the sites shown on C-14 and C-16?

A. The only topographic information available is from the quadrangle maps published by the Geological Survey. The contour lines for the berms shown on Sheet C-14 are at 1-foot intervals.

20. Q. Drawings C-7, C-8, C-9. Because 1-acre emitter sites are to be graveled, can the buildings be moved within the site boundaries to facilitate better grading/drainage design.

A. Building locations at the 1-acre emitter sites cannot be moved. They have been placed to facilitate the emitters and minimize visual impact.

21. Q. On the geotech report, there are rock depths. Are they in meters or feet?

A. The boring logs are in feet (see left column). The Seismic Refraction Survey Report; Rock Depth Profile Chart is in meters/ the Table 2 Rock Depth is in meters.

22. Q. 00860-II, 3.5.4.4 (1/2 acre sites) show 15 ohm resistance required. 3.5.4.6 (1 acre sites) does not have this requirement. Is it required for these sites too?

A. Yes. Grounding is required at locations of mobile emitter hook ups shown on Drawing Sheets C-7, C-8 and C-9.

23. Q. 00860-II 3.3 Structural, 3.3.1.8 has minimum footing and foundation elevations of 965 mm (heated) and 1270 mm (unheated). If contractor encounters rock, can minimum footing and foundations depths be founded on rock w/o required minimum required excavation?

A. The indicated depths are a required minimum regardless of soil-bearing or rock depth.

F. Proposal DUE DATE AND TIME remain unchanged at 3:00 p.m., Local Time, 10 January 2000.

G. Offerors must acknowledge receipt of this amendment by number and date on page 00010-2, in Block 19 or by telegram.

Enclosures:

Revised Sections 00800, 00860-II, and 00890

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<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>				1. CONTRACT ID CODE		PAGE OF PAGES 1 3	
2. AMENDMENT/MODIFICATION NO. 0002		3. EFFECTIVE DATE 12/17/99		4. REQUISITION/PURCHASE REQ. NO. W68MD9-9217-5295		5. PROJECT NO. (If applicable)	
6. ISSUED BY US ARMY ENGINEER DISTRICT, SEATTLE PO BOX 3755 SEATTLE WA 98124-3755  Mary E Mitton		CODE W68MD9  C12(206) 764-6806		7. ADMINISTERED BY (If other than Item 8)		CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) Vendor ID: 00000000				(X)		9A. AMENDMENT OF SOLICITATION NO. DACA67-00-R-0001	
				X		9B. DATED (SEE ITEM 11) 11/19/99	
						10A. MODIFICATION OF CONTRACT/ORDER NO.	
						10B. DATED (SEE ITEM 13)	
CODE 00000		FACILITY CODE					
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS							
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended, <input checked="" type="checkbox"/> is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing items 9 and 10, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.							
12. ACCOUNTING AND APPROPRIATION DATA (If required)							

**13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS,  
IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.**

(X)	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103 (b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER (Specify type of modification and authority)

**E. IMPORTANT:** Contractor ☒ is not, ☐ is required to sign this document and return \_\_\_\_\_ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

DACA67-00-R-0001, Design-Build: ETI Phase II  
Mountain Home AFB, ID

See attached pages

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
(Signature of person authorized to sign)		BY _____ (Signature of Contracting Officer)	

A. This amendment is issued to provide for the revisions to the solicitation listed below.

B. Section 00010, Schedule, is revised as follows:

1. Optional Line Items 0009 and 0010 are added. They are as follows:

0009: All Work for Design and Construction of Alternative Septic Systems at One 1-Acre Sites (For Areas of Shallow Rock Depth)

0010: All Work for Design and Construction of Alternative Septic Systems at Additional 1-Acre Sites (For Areas of Shallow Rock Depth)

2. Line Item No. 0001 is revised to reflect work that is to be excluded from this line item, including 0009 and 0010.

C. Section 00100 (introductory text) is revised as follows:

1. Paragraph 005, Price Proposal, is revised to reflect changes to the page numbers in the price proposal.

2. Paragraph 006, Funding, is revised to reflect changes in the price schedule.

D. Section 00800, Special Clauses, is revised as follows:

1. SC-1, Commencement, Prosecution, and Completion of Work, para. (a) is revised to read as follows: "(a) The Contractor shall be required to (1) commence work under this Contract within 10 calendar days after the date the Contractor receives the notice to proceed for design, (2) prosecute the work diligently, and (3) complete the entire work ready for use not later than 570 calendar days after date of receipt by Contractor of notice to proceed for design. The time stated for completion shall include all work for Phase II and Phase III line items, and final cleanup of the premises."

2. SC-1.1, Option for Increased Quantity, para. a, is revised to read as follows: "a. The Government may increase the quantity of work awarded by exercising one or more of the Optional Bid Items 0005 through 0007, and 0009 and 0010 at any time, or not at all, but no later than 120 calendar days after receipt by Contractor of notice to proceed for design. The Government may increase the quantity of work awarded by exercising Optional Bid 0008 at any time, or not at all, but no later than 360 calendar days after receipt by Contractor of notice to proceed for design. Notice to proceed on work Item(s) added by exercise of the option(s) will be given upon execution of consent of surety."

3. Revisions to drawings by notation are made as follows:

Drawing, Sheet A-1: Revise Sheet Note 28 to read "Duplex Vertical Compressor (2), 5 HP.

Drawing, Sheet A-6: Revise Detail 6 to refer to Section 00860-II for grounding of fencing.

Drawing, Sheet C-14: At Grid location G-1, revise note to read "BLM style fencing."

E. Revisions to Section 00810: Design Review Addressee list and Para. 1.3.4.

F. Revisions to Section 00860-I, Para. 2.2.1(3) to change the Plumbing Code from National Standard Plumbing Code to Uniform Plumbing Code (UPC), latest addition.

G. Revisions to Section 00860-II, as follows:

1. Para. 3.1.3(1)(d) is added to read "The largest turning radius on the site shall be determined by a standard 18-wheel tractor-trailer."

2. Para. 3.1.3(4)(e), the second to the last sentence is revised to read "The bottom of the water reservoir shall be 15 feet above ground level to allow fire truck filling."

3. Para. 3.1.3(4)(j), the first sentence is revised to read "A one-acre reservoir pond to be designed and build by others, to contain a minimum of 50,000 gallons, will be located near the southwest corner of the Juniper Butte Drop Site for joint use by the Air Force as a source of water for fire fighting purposes."

4. Para. 3.1.3(5)(a), Sanitary Sewer, a sentence is added at the end of the paragraph which states "For loading, assume, an average of five persons, and a maximum of 10 persons, staying for two to three days per visit for 16 visits per year."

5. Para. 3.2.2.1, Maintenance Complex, adds a sentence within the paragraph that states "Provide a 4-inch pvc conduit, to originate in the Radio Room and extend underground to a handhole or manhole just outside to the east side of the maintenance compound fence."

6. Para. 3.4.4, Heating, Ventilation and Air Conditioning, subpara. (1)(f), the second to the last sentence is revised to read "At all sites except BB and BK, a wall-mounted propane heater shall be provided ..."

7. Para. 3.4.4(2)(f), 1 Acre Emitter Site, the following sentence is revised to delete the word "only" at the end of the sentence as follows "(Typical for sites except "BB" and "BK".)"

8. Para. 3.4.6, Plumbing, subpara. (2)Fixtures, (b) 1 Acre Emitter Site, adds the following sentence: "Provisions shall be made for draining the storage tank to the exterior of the building during periods of non-use."

9. Para. 3.4.13, Fire Protection Sprinkler System, is revised to add a sentence at the end of the paragraph that reads "Maintenance building shall be heated at all times to prevent freezing of the fire protection system."

10. Para. 3.5.4.3, Maintenance Complex, adds the following at the end of the paragraph: "Maintenance complex building shall be pre-wired for telephone and LAN lines. Termination of telephone lines shall be in the electrical/mechanical room on a 4' by 8' plywood telephone board. LAN lines shall terminate at the same location for future computer rack installation by others."

H. Revisions to Outline Specifications (Section 00890) Sections as follows:

1. 02821, Fencing (Chain-Link), the first sentence is revised to state "Chain-Link fencing and gates to be industrial (Schedule 40) commercial quality all hot-dip galvanized steel."

2. 02821, Alarm Devices, Sprinkler Riser, deletes para. a regarding valve tamper switch.

3. 01005, para. 1.1.1, adds the following sentence: "Coordination with other contractors, who will be working in the vicinity of Three Creek during the summer of 2000, shall also be made through the Contracting Officer."

4. 01025, Payment, is revised to reflect changes in pricing schedule.

5. 01061, revision to add Slickspot Peppergrass Area Identification Map.

6. 01501, para. 1.12, Maintenance of Three Creek Road and SD Road, is revised to add the following sentence: "Provide dust control for entire haul route, including Three Creek Road if haul route passes on this road, throughout the life of this contract."

7. 01702, para. 3.2, As-Built Electronic File Drawings, deletes sub para. 3.2.1 and 3.2.1.1.

I. Proposal DUE DATE AND TIME remain unchanged at 3:00 p.m., Local Time, 10 January 2000.

J. Offerors must acknowledge receipt of this amendment by number and date on page 00010-2, in Block 19 or by telegram.

Enclosures:

Rev. Page 00010-5 and New Page 00010-5a, Revised Sections 00100-INTRO, 00800, 00810, 00860-I, 00860-II, 00890, Revised Technical Sections 01005, 01025, 01061, 01501, 01702

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# AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE

PAGE OF PAGES

1 7

2. AMENDMENT/MODIFICATION NO.

0001

3. EFFECTIVE DATE

12/09/99

4. REQUISITION/PURCHASE REQ. NO.

W68MD9-9217-5295

5. PROJECT NO. (If applicable)

6. ISSUED BY

CODE

W68MD9

7. ADMINISTERED BY (If other than Item 6)

CODE

US ARMY ENGINEER DISTRICT, SEATTLE

PO BOX 3755

SEATTLE WA 98124-3755

Mary E Mitton

C12 (206) 764-6806

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) Vendor ID: 00000000

(X)

9A. AMENDMENT OF SOLICITATION NO.

DACA67-00-R-0001

X

9B. DATED (SEE ITEM 11)

11/19/99

10A. MODIFICATION OF CONTRACT/ORDER NO.

10B. DATED (SEE ITEM 13)

CODE

00000

FACILITY CODE

## 11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☒ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☒ is extended, ☐ is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing items 8 and 10, and returning \_\_\_\_\_ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

## 13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(X)

A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103 (b).

C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

D. OTHER (Specify type of modification and authority)

**E. IMPORTANT:** Contractor ☒ is not, ☐ is required to sign this document and return \_\_\_\_\_ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

RFP No. DACA67-00-R-0001, Design-Build:

ETI Phase II, Mountain Home AFB, ID

see attached pages

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)

16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)

15B. CONTRACTOR/OFFEROR

15C. DATE SIGNED

16B. UNITED STATES OF AMERICA

16C. DATE SIGNED

(Signature of person authorized to sign)

BY

(Signature of Contracting Officer)

SF30 CONTINUATION PAGE

A. This amendment is issued to provide for the revisions to the solicitation listed below.

B. Section 00010, Schedule, is revised as follows:

1. Line Item No. 0001 is revised to reflect work that is to be excluded from this line item.
2. Line Item No. 0005 is revised to show that roads to the ¼-acre and 1-acre emitter sites are included in this line item.
3. Note 2 is revised to clarify the reference to A or B actions.

C. The Notice to Large Business Firms, page 00010-6, is revised as follows:

1. The first sentence is to be revised by pen and ink change to show that the contract clause entitled "Utilization of Small Business Concerns (52.219-0008)" is the October 1999 version. This version of the clause is already in Section 00700, Contract Clauses.

2. Paragraph 9 is revised by pen and ink change to show the following: "Utilization of Small Business Concerns (Oct 1999)."

D. Section 00100, Instructions, Conditions and Notices to Offerors (introductory text), is revised as follows:

1. Paragraph 4.2, TECHNICAL PROPOSAL REQUIREMENTS, is revised to add the following last sentence: "Proposal drawings may be either half size (no less than 11"x17") or full size."

2. Paragraph 4.9.3, PROJECT SCHEDULE, is revised to state at the end of the paragraph: "More points will be assigned for a shorter schedule than required by the RFP in Section 00800, SC-1. For both the Phase II and the Phase III work, allow 3 weeks each for Government review of 65% and 95% design submittals as described in SECTION 00810."

3. Paragraph 0006, FUNDING, is revised as follows: "FY00 funds in the amount of \$11,300,000 are to be available for design and construction of Phase II (Base Items 0001 through 0004 and Optional Items 0005 through 0007) of this project. FY01 funds in the amount of \$9,500,000 are to be available for design and construction of Phase III (Optional Item 0008) of this project."

E. Section 00700, Contract Clauses, is revised as follows:

1. The following clauses, initially provided by reference, are printed in complete text:
  - 52.236-23, Responsibility of the Architect Engineer Contractor
  - 52.236-24, Work Oversight in Architect-Engineer Contracts
  - 52.236-25, Requirements for Registration of Designers
  - 52.244-4, Subcontractors and Outside Associates and Consultants  
(Architect-Engineer Services)
2. Clause 52.248-3, Value Engineering—Construction, is deleted.

SF30 CONTINUATION PAGE

F. Section 00800, Special Clauses, is revised as follows:

1. SC-1, Commencement, Prosecution, and Completion of Work, para. (a) is revised to read as follows: “(a) The Contractor shall be required to (1) commence work under this Contract within 10 calendar days after the date the Contractor receives the notice to proceed for design, (2) prosecute the work diligently, and (3) complete the entire work ready for use not later than 570 calendar days after date of receipt by Contractor of notice to proceed for design. The time stated for completion shall include final cleanup of the premises.”

2. SC-1.1, Option for Increased Quantity, para. a, is revised to read as follows: “a. The Government may increase the quantity of work awarded by exercising one or more of the Optional Bid Items 0005 through 0007 at any time, or not at all, but no later than 120 calendar days after receipt by Contractor of notice to proceed for design. The Government may increase the quantity of work awarded by exercising Optional Bid 0008 at any time, or not at all, but no later than 360 calendar days after receipt by Contractor of notice to proceed for design. Notice to proceed on work Item(s) added by exercise of the option(s) will be given upon execution of consent of surety.”

3. SC-17, Limitation of Payment for Design, is added to the solicitation.

4. SC-20, Compliance Certification, is added to the solicitation.

5. Index of drawings at end of section is revised to include the list of reference drawings.

6. Drawing Sheet C-6 is revised by notation to this drawing.

G. Section 00860, STATEMENT OF WORK, PART II, is revised as follows:

1. Para. 3.1.3(4), Fire Protection System, article (j): The sentence beginning “A valve and dry” is revised to state “A valve and dry fire hydrant (to be used to fill fire-fighting trucks) with two 64mm (2 ½ -inch) standard thread connectors shall be provided near the road.”

2. Para. 3.2.2.4, One-Acre Emitter Complex: The sentence beginning “Site BC” is revised to state “Site BC is to have government furnished and installed antenna tower, solar panels, and radio building.”

H. Davis-Bacon General Wage Decisions:

a. ID990001, Heavy and Highway:

1) Work will be performed in both Zones 1 and 2. Zone definitions for Area 2 states that “If a project is located in more than one zone the lower zone rate shall apply.”

Therefore, Zone 1 rates shall apply to all work performed under this wage decision.

2) There is no electrician wage rate for Owhyee County. The offerors will have to request an additional classification for this discipline after award in accordance with contract clause 52.222-6, Davis-Bacon Act, para. (b)(1).

b. ID990004, Building: A wage rate for electricians for Area 1, Owhyee, is provided in this wage decision.

SF30 CONTINUATION PAGE

I. Technical Specifications are revised as follows:

1. Revision to Section 01001, SUPPLEMENTARY REQUIREMENTS, to add para. 1.10 which reads as follows: "1.10 PERMITS AND CONTRACTOR RESPONSIBILITIES It will be the responsibility of the Contractor to obtain all permits/licenses required for this project. See the Contract Clause paragraph entitled PERMITS AND RESPONSIBILITIES. Coordinate septic system permit applications with 366 CES/CEV prior to submission to the Southwest Health District."

2. Revisions to Section 01025 to match revised Bid Schedule.

3. Revision to Section 01061, Environmental Protection, to change para 1.4.2, Endangered Species, to change the text immediately below the table to read as follows: "Three levels of avoidance necessary at each site (reference also Biology Mitigation Plan): 1. July- November: Proceed with construction as normal. Minimize sagebrush destruction."

4. Revision to Section 01451, CONTRACTOR QUALITY CONTROL, para. 3.2.2j, to delete the words "identified by the sketches attached to Section 00800, SPECIAL CLAUSES" and insert "identified by the sketches attached to APPENDIX D, SITE LEGAL DESCRIPTION."

5. Revision to Section 01702, AS BUILD RECORDS AND DRAWINGS, para. 3.2.3.1 to change require use of AutoCAD release 14.

J. A number of questions were asked at the preproposal teleconference on 2 December 1999. Below are some of the questions with answers that have been obtained after that meeting:

1. Question (Q): 00860-11-32 shows generators for sites BB&BK on the one acre emitter sites. Drawing sheet C-8 shows none. Answer (A): No generator at sites BB & BK see 0860-II-48 para 3.5.4.6. Further information will provided regarding this matter.

2. Q: Can we obtain project water from Clover Creek or Reservoir Pond? A: Contractors responsibility to obtain permissions/permits.

3. Q: Can Industrial Complex be moved north to minimize cut and fill? A: No, it cannot be moved. However, the buildings can be built on the existing contours. Fill will need to be use under the railroad tracks to make them relatively level.

4. Q: 00860\_1-2: How long is the Air Force Training session to familiarize others with the existence of sensitive resources? A: See section 01061-1 para 1.1.

5. Q: 01501, Construction Facilities and Temporary Controls. No staging area was identified within the Juniper Butte site. Can we set up a temporary project work camp and staging area adjacent to the Maintenance Facility work site? The work camp would include a permitted temporary septic system. A: Contractor can set a temporary camp with prior coordination at site approval from 366 CES/CEV. Also refer to paragraph 01501-1.5, which states that staging areas are designated or as directed by the CO.



SF30 CONTINUATION PAGE

6. Q: It appears fire alarm system is local alarm only and does not report anywhere else.  
A: Correct, local alarm only.

7. Q: There does not appear to be any mention of Cabling for LAN or phone lines. Are these going to be needed? A: No phone or LAN lines needed.

8. Q: 00860-II-11 3.2.2.4 states: "Site BC is to have government furnished antenna tower, solar panels, and radio building." Are all of these Items to be installed by the government? The same paragraph states further on that the antenna is government installed but does not mention the other items. A: Government furnished AND installed at site BC for the solar powered antenna tower. At all the 1 acre sites (including site BC) the contractor supplies the pad for the govt. furnished and installed antenna.

9. Q: Sheet A-6.1, Detail 20, BLM Fence Detail: Please indicate diameter of the well casing.  
A: Contractor choice.

10. Q: Does fuel at that vehicle fueling areas need to metered, or controlled by a card reader?  
A: No.

11. Q: By what date will Idaho Power provide to the maintenance complex primary power for transformer installation and subsequent secondary usage for construction? A: IPCO contract scheduled to be complete by Sep '00. No further interim commitments known.

12. Q: What will be the daily or weekly limitations to contractor access to the construction sites or to transiting of the area during construction due to military training? A: No restrictions due to military training, except when retrieving radar unit from Saylor Creek. There are environmental restrictions. See 01061.

13. Q: During the site visit it was noted that road surfaces identified for "some improvement" would take more work than indicated on the drawings. Should the proposed price be based upon work identified in the drawings or should contingencies be added for additional work potentially necessary? A: Bids should be based on information shown in the RFP package. Drawing C-6 for road AM amended to indicate substantial improvements.

14. Q: Does the Septic Tank/Drain field installed have to be done by a registered installer in accordance with the Technical guidance manual? These would be registered by the Health Districts. A: Install according to local laws and requirements.

15. Q: Usually the Southwest Health District requires a management agreement for septic system operation and maintenance. Does the District have jurisdiction on the project site? If so, is the Air Force prepared to obtain any required agreements or is this a contractor responsibility? A: Contractor shall obtain all necessary permits, including septic system permits for all locations that require septic systems. Coordinate permit applications with 366 CES/CEV prior to submission to SWDHD.

SF30 CONTINUATION PAGE

16. Q: The specified design of the "1-Acre" pond leaves out the desired depth or volume of water to be stored. Please provide a clarification on the required storage. A: 50,000 gallon minimum for fire fighting, plus what is needed for ranching activities.

17. Q: In Section 3.1.3 (4), Page 860-II-5, Article c, there is a discussion about "The minimum size of water mains shall be 6-inch. Larger size water main will be required if necessary to met the minimum residual pressure requirements". What are the residual pressure requirements? A: Pressure requirements are whatever is required by the building. See the preceding para (b) in that RFP section.

18. Q: In Section 3.1.3 (4), Page 860-II-5, Article g, on the drawings there is an indication for a "trunk fill". Does this mean the tank should be designed to fill a trunk or vice versa? Would the filling from a water trunk be via a pumped connection? A: Should read "truck" fill.

19. Q: It was discussed that existing fiber optics cable running along Hwy 51 and adjacent and crossing various site entrances (i.e., BI ND5) would be relocated (lowered) if required by others. Please confirm that we should not include cost for this. A: See sheet C6.1, note 3.

20. Q: Is the Air Force training session described in section 00860\_1-2, 1.2-second paragraph the same as the one developed for Phase I? A: Yes.

21. Q: If there is a conflict between the MT. Home AFB Architectural Compatibility and Engineering Standards and the RFP, which prevails? A: RFP.

22. Q: Sheet C-1 indicates 16,060 feet of fence surrounding the Industrial Complex, (2) FEBA complexes and (2) SAM Sites. Is there an additional fence around the Industrial Complex (implied on C-13 note 5), FEBA Complexes or SAM Sites? A: No individual fencing around industrial, FEBA or SAM sites on Juniper Butte.

23. Q: C-11 shows two FEBA sites. Please indicate the dimensions of the sites and what type of fence, if any, is required around the two sites. A: No individual fencing around FEBA site on Juniper Butte.

K. The document entitled "Road Aggregate Source Investigation" was provided under separate cover. This document was provided for reference only and is not part of this solicitation or any contract resulting from this solicitation.

L. A hard copy of Appendix D, Site Legal Descriptions, was provided under separate cover to supplement scanned text in the RFP that was difficult to read.

M. The attached pages are hereby added and substituted for the superseded pages. A side bar and/or underlining have been used to denote location of changes. Insert pages in sequence.

SF30 CONTINUATION PAGE

N. PROPOSAL DUE DATE AND TIME are extended to 3:00 p.m., Local Time, 10 January 2000.

O. Offerors must acknowledge receipt of this amendment by number and date on page 00010-2, in Block 19 or by telegram.

Enclosures:

Rev. Page 00010-5

Revised Section 00100-INTRO

Revised Section 00700

Revised Section 00800

Revised Section 00860-II

Revised Technical Sections 01001, 01025, 01061, 01451, 01702

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**TABLE OF CONTENTS**  
**SECTION 00700**  
**CONTRACT CLAUSES**

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## SECTION 00700

### CONTRACT CLAUSES

#### 1 52. 252- 2 CLAUSES INCORPORATED BY REFERENCE (FEB 1998)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at these addresses:

<http://www.arnet.gov/far>

<http://farsite.hill.af.mil>

<http://www.dtic.mil/dfars>

(End of clause)

#### 2 52. 201- 4001 SUCCESSOR CONTRACTING OFFICERS (52. 0201- 4001)

The Contracting Officer who signed this contract is the primary Contracting Officer for the contract. Nevertheless, any Contracting Officer assigned to the Seattle District and acting within his/her authority may take formal action on this contract when a contract action needs to be taken and the primary Contracting Officer is unavailable.

#### 3 52. 201- 7000 CONTRACTING OFFICER'S REPRESENTATIVE (DEC 1991)

(a) Definition. "Contracting officer's representative" means an individual designated in accordance with subsection 201.602-2 of the Defense Federal Acquisition Regulation Supplement and authorized in writing by the Contracting Officer to perform specific technical or administrative functions.

(b) If the Contracting Officer designates a contracting officer's representative (COR), the Contractor will receive a copy of the written designation. It will specify the extent of the COR's authority to act on behalf of the Contracting Officer. The COR is not authorized to make any commitments or changes that will affect price, quality, quantity, delivery, or any other term or condition of the contract.

(End of clause)

#### 4 52. 202- 1 I DEFINITIONS (OCT 1995) -- ALTERNATE I (APR 1984)

(a) "Head of the agency" (also called "agency head") or "Secretary" means the Secretary (or Attorney General, Administrator, Governor, Chairperson, or other chief official, as appropriate) of the agency, including any deputy or assistant chief official of the agency; and the term "authorized representative" means any person, persons, or board (other than the Contracting Officer) authorized to act for the head of the agency or Secretary.

(b) Commercial component means any component that is a commercial item.

(c) Component means any item supplied to the Federal Government as part of an end item or of another component.

(d) Nondevelopmental item means--

(1) Any previously developed item of supply used exclusively for governmental purposes by a Federal agency, a State or local government, or a foreign government with which the United States has a mutual defense

cooperation agreement;

(2) Any item described in paragraph (e)(1) of this definition that requires only minor modification or modifications of a type customarily available in the commercial marketplace in order to meet the requirements of the procuring department or agency; or

(3) Any item of supply being produced that does not meet the requirements of paragraph (e)(1) or (e)(2) solely because the item is not yet in use.

(e) "Contracting Officer" means a person with the authority to enter into, administer, and/or terminate contracts and make related determinations and findings. The term includes certain authorized representatives of the Contracting Officer acting within the limits of their authority as delegated by the Contracting Officer.

(f) Except as otherwise provided in this contract, the term "subcontracts" includes, but is not limited to, purchase orders and changes and modifications to purchase orders under this contract.

(End of clause)

5      52. 203- 3              GRATUITIES (APR 1984)

(a) The right of the Contractor to proceed may be terminated by written notice if, after notice and hearing, the agency head or a designee determines that the Contractor, its agent, or another representative--

(1) Offered or gave a gratuity (e.g., an entertainment or gift) to an officer, official, or employee of the Government; and

(2) Intended, by the gratuity, to obtain a contract or favorable treatment under a contract.

(b) The facts supporting this determination may be reviewed by any court having lawful jurisdiction.

(c) If this contract is terminated under paragraph (a) above, the Government is entitled--

(1) To pursue the same remedies as in a breach of the contract; and

(2) In addition to any other damages provided by law, to exemplary damages of not less than 3 nor more than 10 times the cost incurred by the Contractor in giving gratuities to the person concerned, as determined by the agency head or a designee. (This subparagraph (c)(2) is applicable only if this contract uses money appropriated to the Department of Defense.)

(d) The rights and remedies of the Government provided in this clause shall not be exclusive and are in addition to any other rights and remedies provided by law or under this contract.

(End of clause)

(R 7-104.16 1952 MAR)

6      52. 203- 5              COVENANT AGAINST CONTINGENT FEES (APR 1984)

(a) The Contractor warrants that no person or agency has been employed or retained to solicit or obtain this contract upon an agreement or understanding for a contingent fee, except a bona fide employee or agency. For breach or violation of this warranty, the Government shall have the right to annul this contract without liability or, in its discretion, to deduct from the contract price or consideration, or otherwise recover, the full amount of the contingent fee.

(b) "Bona fide agency," as used in this clause, means an established commercial or selling agency, maintained by a contractor for the purpose



of securing business, that neither exerts nor proposes to exert improper influence to solicit or obtain Government contracts nor holds itself out as being able to obtain any Government contract or contracts through improper influence.

"Bona fide employee," as used in this clause, means a person, employed by a Contractor and subject to the Contractor's supervision and control as to time, place, and manner of performance, who neither exerts nor proposes to exert improper influence to solicit or obtain Government contracts nor holds out as being able to obtain any Government contract or contracts through improper influence.

"Contingent fee," as used in this clause, means any commission, percentage, brokerage, or other fee that is contingent upon the success that a person or concern has in securing a Government contract.

"Improper influence," as used in this clause, means any influence that induces or tends to induce a Government employee or officer to give consideration or to act regarding a Government contract on any basis other than the merits of the matter.

(End of clause)  
(R 7-103.20 1958 JAN)  
(R 1-1.503)  
(R 1-7.102-18)

7      52.203-7      ANTI-KICKBACK PROCEDURES (JUL 1995)

(a) Definitions.

"Kickback," as used in this clause, means any money, fee, commission, credit, gift, gratuity, thing of value, or compensation of any kind which is provided, directly or indirectly, to any prime Contractor, prime Contractor employee, subcontractor, or subcontractor employee for the purpose of improperly obtaining or rewarding favorable treatment in connection with a prime contract or in connection with a subcontract relating to a prime contract.

"Person," as used in this clause, means a corporation, partnership, business association of any kind, trust, joint-stock company, or individual.

"Prime contract," as used in this clause, means a contract or contractual action entered into by the United States for the purpose of obtaining supplies, materials, equipment, or services of any kind.

"Prime Contractor" as used in this clause, means a person who has entered into a prime contract with the United States.

"Prime Contractor employee," as used in this clause, means any officer, partner, employee, or agent of a prime Contractor.

"Subcontract," as used in this clause, means a contract or contractual action entered into by a prime Contractor or subcontractor for the purpose of obtaining supplies, materials, equipment, or services of any kind under a prime contract.

"Subcontractor," as used in this clause, (1) means any person, other than the prime Contractor, who offers to furnish or furnishes any supplies, materials, equipment, or services of any kind under a prime contract or a subcontract entered into in connection with such prime contract, and (2) includes any person who offers to furnish or furnishes general supplies to the prime Contractor or a higher tier subcontractor.

"Subcontractor employee," as used in this clause, means any officer, partner, employee, or agent of a subcontractor.

(b) The Anti-Kickback Act of 1986 (41 U.S.C. 51-58) (the Act), prohibits any person from -

(1) Providing or attempting to provide or offering to provide any kickback;

(2) Soliciting, accepting, or attempting to accept any kickback; or

(3) Including, directly or indirectly, the amount of any kickback in the contract price charged by a prime Contractor to the United States or in the contract price charged by a subcontractor to a prime Contractor or higher tier subcontractor.

(c)(1) The Contractor shall have in place and follow reasonable procedures designed to prevent and detect possible violations described in paragraph (b) of this clause in its own operations and direct business relationships.

(2) When the Contractor has reasonable grounds to believe that a violation described in paragraph (b) of this clause may have occurred, the Contractor shall promptly report in writing the possible violation. Such reports shall be made to the inspector general of the contracting agency, the head of the contracting agency if the agency does not have an inspector general, or the Department of Justice.

(3) The Contractor shall cooperate fully with any Federal agency investigating a possible violation described in paragraph (b) of this clause.

(4) The Contracting Officer may (i) offset the amount of the kickback against any monies owed by the United States under the prime contract and/or (ii) direct that the Prime Contractor withhold from sums owed a subcontractor under the prime contract the amount of the kickback. The Contracting Officer may order that monies withheld under subdivision (c)(4)(ii) of this clause be paid over to the Government unless the Government has already offset those monies under subdivision (c)(4)(i) of this clause. In either case, the Prime Contractor shall notify the Contracting Officer when the monies are withheld.

(5) The Contractor agrees to incorporate the substance of this clause, including subparagraph (c)(5) but excepting subparagraph (c)(1), in all subcontracts under this contract which exceed \$100,000.

(End of clause)

8      52. 203-8      CANCELLATION, RESCISSION, AND RECOVERY OF FUNDS FOR  
ILLEGAL OR IMPROPER ACTIVITY (JAN 1997)

(a) If the Government receives information that a contractor or a person has engaged in conduct constituting a violation of subsection (a), (b), (c), or (d) of Section 27 of the Office of Federal Procurement Policy Act (41 U.S.C. 423) (the Act), as amended by section 4304 of the National Defense Authorization Act for Fiscal Year 1996 (Pub. L. 104-106), the Government may--

(1) Cancel the solicitation, if the contract has not yet been awarded or issued; or

(2) Rescind the contract with respect to which--

(i) The Contractor or someone acting for the Contractor has been convicted for an offense where the conduct constitutes a violation of subsection 27 (a) or (b) of the Act for the purpose of either--

(A) Exchanging the information covered by such subsections for anything of value; or

(B) Obtaining or giving anyone a competitive advantage in the award of a Federal agency procurement contract; or

(ii) The head of the contracting activity has determined, based upon a preponderance of the evidence, that the Contractor or someone acting for the Contractor has engaged in conduct constituting an offense

punishable under subsection 27(e)(1) of the Act.

(b) If the Government rescinds the contract under paragraph (a) of this clause, the Government is entitled to recover, in addition to any penalty prescribed by law, the amount expended under the contract.

(c) The rights and remedies of the Government specified herein are not exclusive, and are in addition to any other rights and remedies provided by law, regulation, or under this contract.

(End of clause)

9      52. 203- 10      PRICE OR FEE ADJUSTMENT FOR ILLEGAL OR IMPROPER ACTIVITY  
(JAN 1997)

(a) The Government, at its election, may reduce the price of a fixed-price type contract and the total cost and fee under a cost-type contract by the amount of profit or fee determined as set forth in paragraph (b) of this clause if the head of the contracting activity or designee determines that there was a violation of subsection 27 (a), (b), or (c) of the Office of Federal Procurement Policy Act, as amended (41 U.S.C. 423), as implemented in section 3.104 of the Federal Acquisition Regulation.

(b) The price or fee reduction referred to in paragraph (a) of this clause shall be--

(1) For cost-plus-fixed-fee contracts, the amount of the fee specified in the contract at the time of award;

(2) For cost-plus-incentive-fee contracts, the target fee specified in the contract at the time of award, notwithstanding any minimum fee or "fee floor" specified in the contract;

(3) For cost-plus-award-fee contracts--

(i) The base fee established in the contract at the time of contract award;

(ii) If no base fee is specified in the contract, 30 percent of the amount of each award fee otherwise payable to the Contractor for each award fee evaluation period or at each award fee determination point.

(4) For fixed-price-incentive contracts, the Government may--

(i) Reduce the contract target price and contract target profit both by an amount equal to the initial target profit specified in the contract at the time of contract award; or

(ii) If an immediate adjustment to the contract target price and contract target profit would have a significant adverse impact on the incentive price revision relationship under the contract, or adversely affect the contract financing provisions, the Contracting Officer may defer such adjustment until establishment of the total final price of the contract. The total final price established in accordance with the incentive price revision provisions of the contract shall be reduced by an amount equal to the initial target profit specified in the contract at the time of contract award and such reduced price shall be the total final contract price.

(5) For firm-fixed-price contracts, by 10 percent of the initial contract price or a profit amount determined by the Contracting Officer from records or documents in existence prior to the date of the contract award.

(c) The Government may, at its election, reduce a prime contractor's price or fee in accordance with the procedures of paragraph (b) of this clause for violations of the Act by its subcontractors by an amount not to exceed the amount of profit or fee reflected in the subcontract at the time the subcontract was first definitively priced.

(d) In addition to the remedies in paragraphs (a) and (c) of this clause, the Government may terminate this contract for default. The rights and remedies of the Government specified herein are not exclusive, and are in addition to any other rights and remedies provided by law or under this contract.

(End of clause)

10      52. 203- 12      LIMITATION ON PAYMENTS TO INFLUENCE CERTAIN FEDERAL  
TRANSACTIONS (JUN 1997)

(a) Definitions.

"Agency," as used in this clause, means executive agency as defined in 2. 101.

"Covered Federal action," as used in this clause, means any of the following Federal actions:

- (1) The awarding of any Federal contract.
- (2) The making of any Federal grant.
- (3) The making of any Federal loan.
- (4) The entering into of any cooperative agreement.
- (5) The extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

"Indian tribe" and "tribal organization," as used in this clause, have the meaning provided in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450B) and include Alaskan Natives.

"Influencing or attempting to influence," as used in this clause, means making, with the intent to influence, any communication to or appearance before an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any covered Federal action.

"Local government," as used in this clause, means a unit of government in a State and, if chartered, established, or otherwise recognized by a State for the performance of a governmental duty, including a local public authority, a special district, an intrastate district, a council of governments, a sponsor group representative organization, and any other instrumentality of a local government.

"Officer or employee of an agency," as used in this clause, includes the following individuals who are employed by an agency:

- (1) An individual who is appointed to a position in the Government under title 5, United States Code, including a position under a temporary appointment.
- (2) A member of the uniformed services, as defined in subsection 101(3), title 37, United States Code.
- (3) A special Government employee, as defined in section 202, title 18, United States Code.
- (4) An individual who is a member of a Federal advisory committee, as defined by the Federal Advisory Committee Act, title 5, United States Code, appendix 2.

"Person," as used in this clause, means an individual, corporation, company, association, authority, firm, partnership, society, State, and local government, regardless of whether such entity is operated for profit, or not for profit. This term excludes an Indian tribe, tribal organization, or any other Indian organization with respect to expenditures specifically permitted by other Federal law.

"Reasonable compensation," as used in this clause, means, with respect to a regularly employed officer or employee of any person, compensation that is consistent with the normal compensation for such officer or

employee for work that is not furnished to, not funded by, or not furnished in cooperation with the Federal Government.

"Reasonable payment," as used in this clause, means, with respect to professional and other technical services, a payment in an amount that is consistent with the amount normally paid for such services in the private sector.

"Recipient," as used in this clause, includes the Contractor and all subcontractors. This term excludes an Indian tribe, tribal organization, or any other Indian organization with respect to expenditures specifically permitted by other Federal law.

"Regularly employed," as used in this clause, means, with respect to an officer or employee of a person requesting or receiving a Federal contract, an officer or employee who is employed by such person for at least 130 working days within 1 year immediately preceding the date of the submission that initiates agency consideration of such person for receipt of such contract. An officer or employee who is employed by such person for less than 130 working days within 1 year immediately preceding the date of the submission that initiates agency consideration of such person shall be considered to be regularly employed as soon as he or she is employed by such person for 130 working days.

"State," as used in this clause, means a State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, a territory or possession of the United States, an agency or instrumentality of a State, and multi-State, regional, or interstate entity having governmental duties and powers.

(b) Prohibitions.

(1) Section 1352 of title 31, United States Code, among other things, prohibits a recipient of a Federal contract, grant, loan, or cooperative agreement from using appropriated funds to pay any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any of the following covered Federal actions: the awarding of any Federal contract; the making of any Federal grant; the making of any Federal loan; the entering into of any cooperative agreement; or the modification of any Federal contract, grant, loan, or cooperative agreement.

(2) The Act also requires Contractors to furnish a disclosure if any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid, or will be paid, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a Federal contract, grant, loan, or cooperative agreement.

(3) The prohibitions of the Act do not apply under the following conditions:

(i) Agency and legislative liaison by own employees.

(A) The prohibition on the use of appropriated funds, in subparagraph (b)(1) of this clause, does not apply in the case of a payment of reasonable compensation made to an officer or employee of a person requesting or receiving a covered Federal action if the payment is for agency and legislative liaison activities not directly related to a covered Federal action.

(B) For purposes of subdivision (b)(3)(i)(A) of this clause, providing any information specifically requested by an agency or Congress is permitted at any time.

(C) The following agency and legislative liaison activities are permitted at any time where they are not related to a specific

solicitation for any covered Federal action:

(1) Discussing with an agency the qualities and characteristics (including individual demonstrations) of the person's products or services, conditions or terms of sale, and service capabilities.

(2) Technical discussions and other activities regarding the application or adaptation of the person's products or services for an agency's use.

(D) The following agency and legislative liaison activities are permitted where they are prior to formal solicitation of any covered Federal action--

(1) Providing any information not specifically requested but necessary for an agency to make an informed decision about initiation of a covered Federal action;

(2) Technical discussions regarding the preparation of an unsolicited proposal prior to its official submission; and

(3) Capability presentations by persons seeking awards from an agency pursuant to the provisions of the Small Business Act, as amended by Pub. L. 95-507, and subsequent amendments.

(E) Only those services expressly authorized by subdivision (b)(3)(i)(A) of this clause are permitted under this clause.

(ii) Professional and technical services.

(A) The prohibition on the use of appropriated funds, in subparagraph (b)(1) of this clause, does not apply in the case of--

(1) A payment of reasonable compensation made to an officer or employee of a person requesting or receiving a covered Federal action or an extension, continuation, renewal, amendment, or modification of a covered Federal action, if payment is for professional or technical services rendered directly in the preparation, submission, or negotiation of any bid, proposal, or application for that Federal action or for meeting requirements imposed by or pursuant to law as a condition for receiving that Federal action.

(2) Any reasonable payment to a person, other than an officer or employee of a person requesting or receiving a covered Federal action or an extension, continuation, renewal, amendment, or modification of a covered Federal action if the payment is for professional or technical services rendered directly in the preparation, submission, or negotiation of any bid, proposal, or application for that Federal action or for meeting requirements imposed by or pursuant to law as a condition for receiving that Federal action. Persons other than officers or employees of a person requesting or receiving a covered Federal action include consultants and trade associations.

(B) For purposes of subdivision (b)(3)(ii)(A) of this clause, "professional and technical services" shall be limited to advice and analysis directly applying any professional or technical discipline. For example, drafting of a legal document accompanying a bid or proposal by a lawyer is allowable. Similarly, technical advice provided by an engineer on the performance or operational capability of a piece of equipment rendered directly in the negotiation of a contract is allowable. However, communications with the intent to influence made by a professional (such as a licensed lawyer) or a technical person (such as a licensed accountant) are not allowable under this section unless they provide advice and analysis directly applying their professional or technical expertise and unless the advice or analysis is rendered directly and solely in the preparation, submission or negotiation of a covered Federal action. Thus, for example,

communications with the intent to influence made by a lawyer that do not provide legal advice or analysis directly and solely related to the legal aspects of his or her client's proposal, but generally advocate one proposal over another are not allowable under this section because the lawyer is not providing professional legal services. Similarly, communications with the intent to influence made by an engineer providing an engineering analysis prior to the preparation or submission of a bid or proposal are not allowable under this section since the engineer is providing technical services but not directly in the preparation, submission or negotiation of a covered Federal action.

(C) Requirements imposed by or pursuant to law as a condition for receiving a covered Federal award include those required by law or regulation and any other requirements in the actual award documents.

(D) Only those services expressly authorized by subdivisions (b)(3)(ii)(A)(1) and (2) of this clause are permitted under this clause.

(E) The reporting requirements of FAR 3.803(a) shall not apply with respect to payments of reasonable compensation made to regularly employed officers or employees of a person.

(c) Disclosure.

(1) The Contractor who requests or receives from an agency a Federal contract shall file with that agency a disclosure form, OMB standard form LLL, Disclosure of Lobbying Activities, if such person has made or has agreed to make any payment using nonappropriated funds (to include profits from any covered Federal action), which would be prohibited under subparagraph (b)(1) of this clause, if paid for with appropriated funds.

(2) The Contractor shall file a disclosure form at the end of each calendar quarter in which there occurs any event that materially affects the accuracy of the information contained in any disclosure form previously filed by such person under subparagraph (c)(1) of this clause. An event that materially affects the accuracy of the information reported includes--

(i) A cumulative increase of \$25,000 or more in the amount paid or expected to be paid for influencing or attempting to influence a covered Federal action; or

(ii) A change in the person(s) or individual(s) influencing or attempting to influence a covered Federal action; or

(iii) A change in the officer(s), employee(s), or Member(s) contacted to influence or attempt to influence a covered Federal action.

(3) The Contractor shall require the submittal of a certification, and if required, a disclosure form by any person who requests or receives any subcontract exceeding \$100,000 under the Federal contract.

(4) All subcontractor disclosure forms (but not certifications) shall be forwarded from tier to tier until received by the prime Contractor. The prime Contractor shall submit all disclosures to the Contracting Officer at the end of the calendar quarter in which the disclosure form is submitted by the subcontractor. Each subcontractor certification shall be retained in the subcontract file of the awarding Contractor.

(d) Agreement. The Contractor agrees not to make any payment prohibited by this clause.

(e) Penalties.

(1) Any person who makes an expenditure prohibited under paragraph (a) of this clause or who fails to file or amend the disclosure form to be filed or amended by paragraph (b) of this clause shall be subject to civil penalties as provided for by 31 U.S.C. 1352. An imposition of a

civil penalty does not prevent the Government from seeking any other remedy that may be applicable.

(2) Contractors may rely without liability on the representation made by their subcontractors in the certification and disclosure form.

(f) Cost allowability. Nothing in this clause makes allowable or reasonable any costs which would otherwise be unallowable or unreasonable. Conversely, costs made specifically unallowable by the requirements in this clause will not be made allowable under any other provision.

(End of clause)

11      52. 203- 7001      PROHIBITION ON PERSONS CONVICTED OF FRAUD OR OTHER  
DEFENSE- CONTRACT-RELATED FELONIES (MAR 1999)

(a) Definitions.

As used in this clause--

(1) "Arising out of a contract with the DoD" means any act in connection with--

(i) Attempting to obtain;

(ii) Obtaining; or

(iii) Performing a contract or first-tier subcontract of any agency, department, or component of the Department of Defense (DoD).

(2) "Conviction of fraud or any other felony" means any conviction for fraud or a felony in violation of state or Federal criminal statutes, whether entered on a verdict or plea, including a plea of nolo contendere, for which sentence has been imposed.

(3) "Date of conviction" means the date judgment was entered against the individual.

(b) Any individual who is convicted after September 29, 1988, of fraud or any other felony arising out of a contract with the DoD is prohibited from serving--

(1) In a management or supervisory capacity on any DoD contract or first-tier subcontract;

(2) On the board of directors of any DoD contractor or first-tier subcontractor;

(3) As a consultant, agent, or representative for any DoD contractor or first-tier subcontractor; or

(4) In any other capacity with the authority to influence, advise, or control the decisions of any DoD contractor or subcontractor with regard to any DoD contract or first-tier subcontract.

(c) Unless waived, the prohibition in paragraph (b) of this clause applies for not less than 5 years from the date of conviction.

(d) 10 U.S.C. 2408 provides that a defense Contractor or first-tier subcontractor shall be subject to a criminal penalty of not more than \$500,000 if convicted of knowingly--

(1) Employing a person under a prohibition specified in paragraph (b) of this clause; or

(2) Allowing such a person to serve on the board of directors of the Contractor or first-tier subcontractor.

(e) In addition to the criminal penalties contained in 10 U.S.C. 2408, the Government may consider other available remedies, such as--

(1) Suspension or debarment;

(2) Cancellation of the contract at no cost to the Government; or

(3) Termination of the contract for default.



(f) The Contractor may submit written requests for waiver of the prohibition in paragraph (b) of this clause to the Contracting Officer. Requests shall clearly identify--

- (1) The person involved;
- (2) The nature of the conviction and resultant sentence or punishment imposed;
- (3) The reasons for the requested waiver; and
- (4) An explanation of why a waiver is in the interest of national security.

(g) The Contractor agrees to include the substance of this clause, appropriately modified to reflect the identity and relationship of the parties, in all first-tier subcontracts exceeding the simplified acquisition threshold in Part 2 of the Federal Acquisition Regulation, except those for commercial items or components.

(h) Pursuant to 10 U.S.C. 2408(c), defense contractors and subcontractors may obtain information as to whether a particular person has been convicted of fraud or any other felony arising out of a contract with the DoD by contacting The Office of Justice Programs, The Denial of Federal Benefits Office, U.S. Department of Justice, telephone (202) 616-3507.

(End of clause)

12      52. 203- 7002      DISPLAY OF DOD HOTLINE POSTER (DEC 1991)

(a) The Contractor shall display prominently in common work areas within business segments performing work under Department of Defense (DoD) contracts, DoD Hotline Posters prepared by the DoD Office of the Inspector General.

(b) DoD Hotline Posters may be obtained from the DoD Inspector General, ATTN: Defense Hotline, 400 Army Navy Drive, Washington, DC 22202-2884.

(c) The Contractor need not comply with paragraph (a) of this clause if it has established a mechanism, such as a hotline, by which employees may report suspected instances of improper conduct, and instructions that encourage employees to make such reports.

(End of clause)

13      52. 204- 4      PRINTING/COPYING DOUBLE-SIDED ON RECYCLED PAPER (JUN 1996)

(a) In accordance with Executive Order 12873, dated October 20, 1993, as amended by Executive Order 12995, dated March 25, 1996, the Offeror/Contractor is encouraged to submit paper documents, such as offers, letters, or reports, that are printed/copied double-sided on recycled paper that has at least 20 percent postconsumer material.

(b) The 20 percent standard applies to high-speed copier paper, offset paper, forms bond, computer printout paper, carbonless paper, file folders, white woven envelopes, and other uncoated printed and writing paper, such as writing and office paper, book paper, cotton fiber paper, and cover stock. An alternative to meeting the 20 percent postconsumer material standard is 50 percent recovered material content of certain industrial by-products.

(End of clause)

**PROTECTING THE GOVERNMENT'S INTEREST WHEN SUBCONTRACTING  
WITH CONTRACTORS DEBARRED, SUSPENDED, OR PROPOSED FOR  
DEBARMENT (JUL 1995)**

(a) The Government suspends or debarb Contractors to protect the Government's interest. The Contractor shall not enter into any subcontract in excess of \$25,000 with a Contractor that is debarred, suspended, or proposed for debarment unless there is a compelling reason to do so.

(b) The Contractor shall require each proposed first-tier subcontractor, whose subcontract will exceed \$25,000, to disclose to the Contractor, in writing, whether as of the time of award of the subcontract, the subcontractor, or its principals, is or is not debarred, suspended, or proposed for debarment by the Federal Government.

(c) A corporate officer or a designee of the Contractor shall notify the Contracting Officer, in writing, before entering into a subcontract with a party that is debarred, suspended, or proposed for debarment (see FAR 9.404 for information on the List of Parties Excluded from Federal Procurement and Nonprocurement Programs). The notice must include the following:

(1) The name of the subcontractor.

(2) The Contractor's knowledge of the reasons for the subcontractor being on the List of Parties Excluded from Federal Procurement and Nonprocurement Programs.

(3) The compelling reason(s) for doing business with the subcontractor notwithstanding its inclusion on the List of Parties Excluded from Federal Procurement and Nonprocurement Programs.

(4) The systems and procedures the Contractor has established to ensure that it is fully protecting the Government's interests when dealing with such subcontractor in view of the specific basis for the party's debarment, suspension, or proposed debarment.

(End of clause)

**SUBCONTRACTING WITH FIRMS THAT ARE OWNED OR CONTROLLED BY  
THE GOVERNMENT OF A TERRORIST COUNTRY (MAR 1998)**

(a) Unless the Government determines that there is a compelling reason to do so, the Contractor shall not enter into any subcontract in excess of \$25,000 with a firm, or a subsidiary of a firm, that is identified, on the List of Parties Excluded from Federal Procurement and Nonprocurement Programs, as being ineligible for the award of Defense contracts or subcontracts because it is owned or controlled by the government of a terrorist country.

(b) A corporate officer or a designee of the Contractor shall notify the Contracting Officer, in writing, before entering into a subcontract with a party that is identified, on the List of Parties Excluded from Federal Procurement and Nonprocurement Programs, as being ineligible for the award of Defense contracts or subcontracts because it is owned or controlled by the government of a terrorist country. The notice must include the name of the proposed subcontractor and the compelling reason(s) for doing business with the subcontractor notwithstanding its inclusion on the List of Parties Excluded From Federal Procurement and Nonprocurement Programs.

(End of clause)

(a) If the performance of all or any part of the work is suspended, delayed, or interrupted due to an order of a court of competent jurisdiction as a result of environmental litigation, as defined below, the Contracting Officer, at the request of the Contractor, shall determine whether the order is due in any part to the acts or omissions of the Contractor or a Subcontractor at any tier not required by the terms of this contract. If it is determined that the order is not due in any part to acts or omissions of the Contractor or a Subcontractor at any tier other than as required by the terms of this contract, such suspension, delay, or interruption shall be considered as if ordered by the Contracting Officer in the administration of this contract under the terms of the "Suspension of Work" clause of this contract. The period of such suspension, delay or interruption shall be considered unreasonable, and an adjustment shall be made for any increase in the cost of performance of this contract (excluding profit) as provided in that clause, subject to all the provisions thereof.

(b) The term "environmental litigation", as used herein, means a lawsuit alleging that the work will have an adverse effect on the environment or that the Government has not duly considered, either substantially or procedurally, the effect of the work on the environment.

(a) As used in this clause, records includes books, documents, accounting procedures and practices, and other data, regardless of type and regardless of whether such items are in written form, in the form of computer data, or in any other form.

(b) Examination of costs. If this is a cost-reimbursement, incentive, time-and-materials, labor-hour, or price redeterminable contract, or any combination of these, the Contractor shall maintain and the Contracting Officer, or an authorized representative of the Contracting Officer, shall have the right to examine and audit all records and other evidence sufficient to reflect properly all costs claimed to have been incurred or anticipated to be incurred directly or indirectly in performance of this contract. This right of examination shall include inspection at all reasonable times of the Contractor's plants, or parts of them, engaged in performing the contract.

(c) Cost or pricing data. If the Contractor has been required to submit cost or pricing data in connection with any pricing action relating to this contract, the Contracting Officer, or an authorized representative of the Contracting Officer, in order to evaluate the accuracy, completeness, and currency of the cost or pricing data, shall have the right to examine and audit all of the Contractor's records, including computations and projections, related to--

- (1) The proposal for the contract, subcontract, or modification;
- (2) The discussions conducted on the proposal(s), including those related to negotiating;
- (3) Pricing of the contract, subcontract, or modification; or
- (4) Performance of the contract, subcontract or modification.

(d) Comptroller General--(1) The Comptroller General of the United States, or an authorized representative, shall have access to and the right

to examine any of the Contractor's directly pertinent records involving transactions related to this contract or a subcontract hereunder.

(2) This paragraph may not be construed to require the Contractor or subcontractor to create or maintain any record that the Contractor or subcontractor does not maintain in the ordinary course of business or pursuant to a provision of law.

(e) Reports. If the Contractor is required to furnish cost, funding, or performance reports, the Contracting Officer or an authorized representative of the Contracting Officer shall have the right to examine and audit the supporting records and materials, for the purpose of evaluating (1) the effectiveness of the Contractor's policies and procedures to produce data compatible with the objectives of these reports and (2) the data reported.

(f) Availability. The Contractor shall make available at its office at all reasonable times the records, materials, and other evidence described in paragraphs (a), (b), (c), (d), and (e) of this clause, for examination, audit, or reproduction, until 3 years after final payment under this contract or for any shorter period specified in Subpart 4.7, Contractor Records Retention, of the Federal Acquisition Regulation (FAR), or for any longer period required by statute or by other clauses of this contract.

In addition--

(1) If this contract is completely or partially terminated, the Contractor shall make available the records relating to the work terminated until 3 years after any resulting final termination settlement; and

(2) The Contractor shall make available records relating to appeals under the Disputes clause or to litigation or the settlement of claims arising under or relating to this contract until such appeals, litigation, or claims are finally resolved.

(g) The Contractor shall insert a clause containing all the terms of this clause, including this paragraph (a), in all subcontracts under this contract that exceed the simplified acquisition threshold, and--

(1) That are cost-reimbursement, incentive, time-and-materials, labor-hour, or price-redeterminable type or any combination of these;

(2) For which cost or pricing data are required; or

(3) That require the subcontractor to furnish reports as discussed in paragraph (e) of this clause.

The clause may be altered only as necessary to identify properly the contracting parties and the Contracting Officer under the Government prime contract.

(End of clause)

18 52.215-8 ORDER OF PRECEDENCE--UNIFORM CONTRACT FORMAT (OCT 1997)

Any inconsistency in this solicitation or contract shall be resolved by giving precedence in the following order:

(a) The Schedule (excluding the specifications).

(b) Representations and other instructions.

(c) Contract clauses.

(d) Other documents, exhibits, and attachments.

(e) The specifications.

(End of clause)

(a) This clause shall become operative only for any modification to this contract involving a pricing adjustment expected to exceed the threshold for submission of cost or pricing data at FAR 15.403-4, except that this clause does not apply to any modification if an exception under FAR 15.403-1 applies.

(b) If any price, including profit or fee, negotiated in connection with any modification under this clause, or any cost reimbursable under this contract, was increased by any significant amount because (1) the Contractor or a subcontractor furnished cost or pricing data that were not complete, accurate, and current as certified in its Certificate of Current Cost or Pricing Data, (2) a subcontractor or prospective subcontractor furnished the Contractor cost or pricing data that were not complete, accurate, and current as certified in the Contractor's Certificate of Current Cost or Pricing Data, or (3) any of these parties furnished data of any description that were not accurate, the price or cost shall be reduced accordingly and the contract shall be modified to reflect the reduction. This right to a price reduction is limited to that resulting from defects in data relating to modifications for which this clause becomes operative under paragraph (a) of this clause.

(c) Any reduction in the contract price under paragraph (b) of this clause due to defective data from a prospective subcontractor that was not subsequently awarded the subcontract shall be limited to the amount, plus applicable overhead and profit markup, by which--

(1) The actual subcontract; or

(2) The actual cost to the Contractor, if there was no subcontract, was less than the prospective subcontract cost estimate submitted by the Contractor; provided, that the actual subcontract price was not itself affected by defective cost or pricing data.

(d)(1) If the Contracting Officer determines under paragraph (b) of this clause that a price or cost reduction should be made, the Contractor agrees not to raise the following matters as a defense:

(i) The Contractor or subcontractor was a sole source supplier or otherwise was in a superior bargaining position and thus the price of the contract would not have been modified even if accurate, complete, and current cost or pricing data had been submitted.

(ii) The Contracting Officer should have known that the cost or pricing data in issue were defective even though the Contractor or subcontractor took no affirmative action to bring the character of the data to the attention of the Contracting Officer.

(iii) The contract was based on an agreement about the total cost of the contract and there was no agreement about the cost of each item procured under the contract.

(iv) The Contractor or subcontractor did not submit a Certificate of Current Cost or Pricing Data.

(2)(i) Except as prohibited by subdivision (d)(2)(ii) of this clause, an offset in an amount determined appropriate by the Contracting Officer based upon the facts shall be allowed against the amount of a contract price reduction if--

(A) The Contractor certifies to the Contracting Officer that, to the best of the Contractor's knowledge and belief, the Contractor is entitled to the offset in the amount requested; and

(B) The Contractor proves that the cost or pricing data were available before the "as of" date specified on its Certificate of Current Cost or Pricing Data, and that the data were not submitted

before such date.

(ii) An offset shall not be allowed if--

(A) The understated data were known by the Contractor to be understated before the "as of" date specified on its Certificate of Current Cost or Pricing Data; or

(B) The Government proves that the facts demonstrate that the contract price would not have increased in the amount to be offset even if the available data had been submitted before the "as of" date specified on its Certificate of Current Cost or Pricing Data.

(e) If any reduction in the contract price under this clause reduces the price of items for which payment was made prior to the date of the modification reflecting the price reduction, the Contractor shall be liable to and shall pay the United States at the time such overpayment is repaid--

(1) Simple interest on the amount of such overpayment to be computed from the date(s) of overpayment to the Contractor to the date the Government is repaid by the Contractor at the applicable underpayment rate effective for each quarter prescribed by the Secretary of the Treasury under 26 U. S. C. 6621(a)(2); and

(2) A penalty equal to the amount of the overpayment, if the Contractor or subcontractor knowingly submitted cost or pricing data that were incomplete, inaccurate, or noncurrent.

(End of clause)

20      52.215-13      SUBCONTRACTOR COST OR PRICING DATA--MODIFICATIONS  
(OCT 1997)

(a) The requirements of paragraphs (b) and (c) of this clause shall--

(1) Become operative only for any modification to this contract involving a pricing adjustment expected to exceed the threshold for submission of cost or pricing data at FAR 15.403-4; and

(2) Be limited to such modifications.

(b) Before awarding any subcontract expected to exceed the threshold for submission of cost or pricing data at FAR 15.403-4, on the date of agreement on price or the date of award, whichever is later; or before pricing any subcontract modification involving a pricing adjustment expected to exceed the threshold for submission of cost or pricing data at FAR 15.403-4, the Contractor shall require the subcontractor to submit cost or pricing data (actually or by specific identification in writing), unless an exception under FAR 15.403-1 applies.

(c) The Contractor shall require the subcontractor to certify in substantially the form prescribed in FAR 15.406-2 that, to the best of its knowledge and belief, the data submitted under paragraph (b) of this clause were accurate, complete, and current as of the date of agreement on the negotiated price of the subcontract or subcontract modification.

(d) The Contractor shall insert the substance of this clause, including this paragraph (d), in each subcontract that exceeds the threshold for submission of cost or pricing data at FAR 15.403-4 on the date of agreement on price or the date of award, whichever is later.

(End of clause)

21      52.219-8      UTILIZATION OF SMALL BUSINESS CONCERNS (OCT 1999)

(a) It is the policy of the United States that small business concerns, HUBZone small business concerns, small business concerns

owned and controlled by socially and economically disadvantaged individuals, and small business concerns owned and controlled by women shall have the maximum practicable opportunity to participate in performing contracts let by any Federal agency, including contracts and subcontracts for subsystems, assemblies, components, and related services for major systems. It is further the policy of the United States that its prime contractors establish procedures to ensure the timely payment of amounts due pursuant to the terms of their subcontracts with small business concerns, HUBZone small business concerns, small business concerns owned and controlled by socially and economically disadvantaged individuals, and small business concerns owned and controlled by women.

(b) The Contractor hereby agrees to carry out this policy in the awarding of subcontracts to the fullest extent consistent with efficient contract performance. The Contractor further agrees to cooperate in any studies or surveys as may be conducted by the United States Small Business Administration or the awarding agency of the United States as may be necessary to determine the extent of the Contractor's compliance with this clause.

(c) Definitions. As used in this contract

(1) Small business concern means a small business as defined pursuant to section 3 of the Small Business Act and relevant regulations promulgated pursuant thereto.

(2) HUBZone small business concern means a small business concern that appears on the List of Qualified HUBZone Small Business Concerns maintained by the Small Business Administration.

(3) Small business concern owned and controlled by socially and economically disadvantaged individuals and small disadvantaged business concern mean a small business concern that represents, as part of its offer that--

(i) It has received certification as a small disadvantaged business concern consistent with 13 CFR 124, Subpart B;

(ii) No material change in disadvantaged ownership and control has occurred since its certification;

(iii) Where the concern is owned by one or more individuals, the net worth of each individual upon whom the certification is based does not exceed \$750,000 after taking into account the applicable exclusions set forth at 13 CFR 124.104(c)(2); and

(iv) It is identified, on the date of its representation, as a certified small disadvantaged business in the database maintained by the Small Business Administration (PRO-Net).

(4) Small business concern owned and controlled by women means a small business concern--

(i) Which is at least 51 percent owned by one or more women, or, in the case of any publicly owned business, at least 51 percent of the stock of which is owned by one or more women; and

(ii) Whose management and daily business operations are controlled by one or more women.

(d) Contractors acting in good faith may rely on written representations by their subcontractors regarding their status as a small business concern, a HUBZone small business concern, a small business concern owned and controlled by socially and economically disadvantaged individuals, or a small business concern owned and controlled by women.

(End of clause)

(a) This clause does not apply to small business concerns.

(b) Definitions. As used in this clause--

Commercial item means a product or service that satisfies the definition of commercial item in section 2.101 of the Federal Acquisition Regulation.

Commercial plan means a subcontracting plan (including goals) that covers the offeror's fiscal year and that applies to the entire production of commercial items sold by either the entire company or a portion thereof (e.g., division, plant, or product line).

Individual contract plan means a subcontracting plan that covers the entire contract period (including option periods), applies to a specific contract, and has goals that are based on the offeror's planned subcontracting in support of the specific contract, except that indirect costs incurred for common or joint purposes may be allocated on a prorated basis to the contract.

Master plans means a subcontracting plan that contains all the required elements of an individual contract plan, except goals, and may be incorporated into individual contract plans, provided the master plan has been approved.

Subcontract means any agreement (other than one involving an employer-employee relationship) entered into by a Federal Government prime Contractor or subcontractor calling for supplies or services required for performance of the contract or subcontract.

(c) Proposals submitted in response to this solicitation shall include a subcontracting plan that separately addresses subcontracting with small business, HUBZone small business, small disadvantaged business, and women-owned small business concerns. If the offeror is submitting an individual contract plan, the plan must separately address subcontracting with small business, HUBZone small business, small disadvantaged business, and women-owned small business concerns, with a separate part for the basic contract and separate parts for each option (if any). The plan shall be included in and made a part of the resultant contract. The subcontracting plan shall be negotiated within the time specified by the Contracting Officer. Failure to submit and negotiate a subcontracting plan shall make the offeror ineligible for award of a contract.

(d) The offeror's subcontracting plan shall include the following:

(1) Goals, expressed in terms of percentages of total planned subcontracting dollars, for the use of small business, HUBZone small business, small disadvantaged business, and women-owned small business concerns as subcontractors. The offeror shall include all subcontracts that contribute to contract performance, and may include a proportionate share of products and services that are normally allocated as indirect costs.

(2) A statement of--

(i) Total dollars planned to be subcontracted for an individual contract plan; or the offeror's total projected sales, expressed in dollars, and the total value of projected subcontracts to support the sales for a commercial plan;

(ii) Total dollars planned to be subcontracted to small business concerns;

(iii) Total dollars planned to be subcontracted to HUBZone small business concerns;



- (iv) Total dollars planned to be subcontracted to small disadvantaged business concerns; and
- (v) Total dollars planned to be subcontracted to women-owned small business concerns.

(3) A description of the principal types of supplies and services to be subcontracted, and an identification of the types planned for subcontracting to--

- (i) Small business concerns;
- (ii) HUBZone small business concerns;
- (iii) Small disadvantaged business concerns; and
- (iv) Women-owned small business concerns.

(4) A description of the method used to develop the subcontracting goals in paragraph (d)(1) of this clause.

(5) A description of the method used to identify potential sources for solicitation purposes (e.g., existing company source lists, the Procurement Marketing and Access Network (PRO-Net) of the Small Business Administration (SBA), the list of certified small disadvantaged business concerns of the SBA, the National Minority Purchasing Council Vendor Information Service, the Research and Information Division of the Minority Business Development Agency in the Department of Commerce, or small, HUBZone small, small disadvantaged, and women-owned small business trade associations). A firm may rely on the information contained in PRO-Net as an accurate representation of a concern's size and ownership characteristics for the purposes of maintaining a small and women-owned small business source list. A firm shall rely on the information contained in SBA's list of small disadvantaged business concerns as an accurate representation of a concern's size and ownership characteristics for the purposes of maintaining a small disadvantaged business source list. Use of PRO-Net and/or the SBA list of small disadvantaged business concerns as its source lists does not relieve a firm of its responsibilities (e.g., outreach, assistance, counseling, publicizing subcontracting opportunities) in this clause.

(6) A statement as to whether or not the offeror included indirect costs in establishing subcontracting goals, and a description of the method used to determine the proportionate share of indirect costs to be incurred with--

- (i) Small business concerns;
- (ii) HUBZone small business concerns;
- (iii) Small disadvantaged business concerns; and
- (iv) Women-owned small business concerns.

(7) The name of the individual employed by the offeror who will administer the offeror's subcontracting program, and a description of the duties of the individual.

(8) A description of the efforts the offeror will make to assure that small business, HUBZone small business, small disadvantaged business, and women-owned small business concerns have an equitable opportunity to compete for subcontracts.

(9) Assurances that the offeror will include the clause of this contract entitled "Utilization of Small Business Concerns" in all subcontracts that offer further subcontracting opportunities, and that the offeror will require all subcontractors (except small business concerns) that receive subcontracts in excess of \$500,000 (\$1,000,000 for construction of any public facility) to adopt a subcontracting plan that complies with the requirements of this clause.

(10) Assurances that the offeror will--

- (i) Cooperate in any studies or surveys as may be required;
- (ii) Submit periodic reports so that the Government can determine the extent of compliance by the offeror with the subcontracting plan;
- (iii) Submit Standard Form (SF) 294, Subcontracting Report for Individual Contracts, and/or SF 295, Summary Subcontract Report, in accordance with the instructions on the forms or as provided in agency regulations and in paragraph (j) of this clause; and
- (iv) Ensure that its subcontractors agree to submit SF 294 and SF 295.

(11) A description of the types of records that will be maintained concerning procedures that have been adopted to comply with the requirements and goals in the plan, including establishing source lists; and a description of the offeror's efforts to locate small business, HUBZone small business, small disadvantaged business, and women-owned small business concerns and award subcontracts to them. The records shall include at least the following (on a plant-wide or company-wide basis, unless otherwise indicated):

- (i) Source lists (e.g., PRO-Net), guides, and other data that identify small business, HUBZone small business, small disadvantaged business, and women-owned small business concerns.

- (ii) Organizations contacted in an attempt to locate sources that are small business, HUBZone small business, small disadvantaged business, or women-owned small business concerns.

- (iii) Records on each subcontract solicitation resulting in an award of more than \$100,000, indicating--

- (A) Whether small business concerns were solicited and, if not, why not;

- (B) Whether HUBZone small business concerns were solicited and, if not, why not;

- (C) Whether small disadvantaged business concerns were solicited and, if not, why not;

- (D) Whether women-owned small business concerns were solicited and, if not, why not; and

- (E) If applicable, the reason award was not made to a small business concern.

- (iv) Records of any outreach efforts to contact--

- (A) Trade associations;

- (B) Business development organizations; and

- (C) Conferences and trade fairs to locate small, HUBZone small, small disadvantaged, and women-owned small business sources.

- (v) Records of internal guidance and encouragement provided to buyers through--

- (A) Workshops, seminars, training, etc.; and

- (B) Monitoring performance to evaluate compliance with the program's requirements.

- (vi) On a contract-by-contract basis, records to support award data submitted by the offeror to the Government, including the name, address, and business size of each subcontractor. Contractors having commercial plans need not comply with this requirement.

(e) In order to effectively implement this plan to the extent consistent with efficient contract performance, the Contractor shall perform the following functions:

- (1) Assist small business, HUBZone small business, small disadvantaged business, and women-owned small business concerns by arranging solicitations, time for the preparation of bids,

quantities, specifications, and delivery schedules so as to facilitate the participation by such concerns. Where the Contractor's lists of potential small business, HUBZone small business, small disadvantaged business, and women-owned small business subcontractors are excessively long, reasonable effort shall be made to give all such small business concerns an opportunity to compete over a period of time.

(2) Provide adequate and timely consideration of the potentialities of small business, HUBZone small business, small disadvantaged business, and women-owned small business concerns in all "make-or-buy" decisions.

(3) Counsel and discuss subcontracting opportunities with representatives of small business, HUBZone small business, small disadvantaged business, and women-owned small business firms.

(4) Provide notice to subcontractors concerning penalties and remedies for misrepresentations of business status as small, HUBZone small, small disadvantaged, or women-owned small business for the purpose of obtaining a subcontract that is to be included as part or all of a goal contained in the Contractor's subcontracting plan.

(f) A master plan on a plant or division-wide basis that contains all the elements required by paragraph (d) of this clause, except goals, may be incorporated by reference as a part of the subcontracting plan required of the offeror by this clause; provided--(1) the master plan has been approved, (2) the offeror ensures that the master plan is updated as necessary and provides copies of the approved master plan, including evidence of its approval, to the Contracting Officer, and (3) goals and any deviations from the master plan deemed necessary by the Contracting Officer to satisfy the requirements of this contract are set forth in the individual subcontracting plan.

(g) A commercial plan is the preferred type of subcontracting plan for contractors furnishing commercial items. The commercial plan shall relate to the offeror's planned subcontracting generally, for both commercial and Government business, rather than solely to the Government contract. Commercial plans are also preferred for subcontractors that provide commercial items under a prime contract, whether or not the prime contractor is supplying a commercial item.

(h) Prior compliance of the offeror with other such subcontracting plans under previous contracts will be considered by the Contracting Officer in determining the responsibility of the offeror for award of the contract.

(i) The failure of the Contractor or subcontractor to comply in good faith with (1) the clause of this contract entitled "Utilization Of Small Business Concerns," or (2) an approved plan required by this clause, shall be a material breach of the contract.

(j) The Contractor shall submit the following reports:

(1) Standard Form 294, Subcontracting Report for Individual Contracts. This report shall be submitted to the Contracting Officer semiannually and at contract completion. The report covers subcontract award data related to this contract. This report is not required for commercial plans.

(2) Standard Form 295, Summary Subcontract Report. This report encompasses all the contracts with the awarding agency. It must be submitted semi-annually for contracts with the Department of Defense and annually for contracts with civilian agencies. If the reporting activity is covered by a commercial plan, the reporting activity must report annually all subcontract awards under that plan. All reports submitted at the close of each fiscal year (both individual and commercial plans) shall include a breakout, in the Contractor's

format, of subcontract awards, in whole dollars, to small disadvantaged business concerns by Standard Industrial Classification (SIC) Major Group. For a commercial plan, the Contractor may obtain from each of its subcontractors a predominant SIC Major Group and report all awards to that subcontractor under its predominant SIC Major Group.

(End of clause)

23      52. 219- 16      LIQUIDATED DAMAGES--SUBCONTRACTING PLAN (JAN 1999)

(a) "Failure to make a good faith effort to comply with the subcontracting plan," as used in this clause, means a willful or intentional failure to perform in accordance with the requirements of the subcontracting plan approved under the clause in this contract entitled "Small Business Subcontracting Plan," or willful or intentional action to frustrate the plan.

(b) Performance shall be measured by applying the percentage goals to the total actual subcontracting dollars or, if a commercial plan is involved, to the pro rata share of actual subcontracting dollars attributable to Government contracts covered by the commercial plan. If, at contract completion or, in the case of a commercial plan, at the close of the fiscal year for which the plan is applicable, the Contractor has failed to meet its subcontracting goals and the Contracting Officer decides in accordance with paragraph (c) of this clause that the Contractor failed to make a good faith effort to comply with its subcontracting plan, established in accordance with the clause in this contract entitled "Small Business Subcontracting Plan," the Contractor shall pay the Government liquidated damages in an amount stated. The amount of probable damages attributable to the Contractor's failure to comply shall be an amount equal to the actual dollar amount by which the Contractor failed to achieve each subcontract goal.

(c) Before the Contracting Officer makes a final decision that the Contractor has failed to make such good faith effort, the Contracting Officer shall give the Contractor written notice specifying the failure and permitting the Contractor to demonstrate what good faith efforts have been made and to discuss the matter. Failure to respond to the notice may be taken as an admission that no valid explanation exists. If, after consideration of all the pertinent data, the Contracting Officer finds that the Contractor failed to make a good faith effort to comply with the subcontracting plan, the Contracting Officer shall issue a final decision to that effect and require that the Contractor pay the Government liquidated damages as provided in paragraph (b) of this clause.

(d) With respect to commercial plans, the Contracting Officer who approved the plan will perform the functions of the Contracting Officer under this clause on behalf of all agencies with contracts covered by the commercial plan.

(e) The Contractor shall have the right of appeal, under the clause in this contract entitled, Disputes, from any final decision of the Contracting Officer.

(f) Liquidated damages shall be in addition to any other remedies that the Government may have.

(End of clause)

This clause supplements the Federal Acquisition Regulation 52.219-9, Small, Small Disadvantaged and Women-Owned Small Business Subcontracting Plan, clause of this contract.

(a) Definitions.

"Historically black colleges and universities," as used in this clause, means institutions determined by the Secretary of Education to meet the requirements of 34 CFR 608.2. The term also means any nonprofit research institution that was an integral part of such a college or university before November 14, 1986.

"Minority institutions," as used in this clause, means institutions meeting the requirements of section 1046(3) of the Higher Education Act of 1965 (20 U.S.C. 1135d-5(3)). The term also includes Hispanic-serving institutions as defined in section 316(b)(1) of such Act (20 U.S.C. 1059c(b)(1)).

(b) Except for company or division-wide commercial items subcontracting plans, the term "small disadvantaged business," when used in the FAR 52.219-9 clause, includes historically black colleges and universities and minority institutions, in addition to small disadvantaged business concerns.

(c) Work under the contract or its subcontracts shall be credited toward meeting the small disadvantaged business concern goal required by paragraph (d) of the FAR 52.219-9 clause when:

(1) It is performed on Indian lands or in joint venture with an Indian tribe or a tribally-owned corporation, and

(2) It meets the requirements of 10 U.S.C. 2323a.

(d) Subcontracts awarded to workshops approved by the Committee for Purchase from People Who are Blind or Severely Disabled (41 U.S.C. 46-48), may be counted toward the Contractor's small business subcontracting goal.

(e) A mentor firm, under the Pilot Mentor-Protege Program established under Section 831 of Pub. L. 101-510, as amended, may count toward its small disadvantaged business goal, subcontracts awarded--

(1) Protege firms which are qualified organizations employing the severely handicapped; and

(2) Former protege firms that meet the criteria in Section 831(g)(4) of Pub. L. 101-510.

(f) The master plan approval referred to in paragraph (f) of the FAR 52.219-9 clause is approval by the Contractor's cognizant contract administration activity.

(g) In those subcontracting plans which specifically identify small, small disadvantaged, and women-owned small businesses, the Contractor shall notify the Administrative Contracting Officer of any substitutions of firms that are not small, small disadvantaged, or women-owned small businesses for the firms listed in the subcontracting plan. Notifications shall be in writing and shall occur within a reasonable period of time after award of the subcontract. Contractor-specified formats shall be acceptable.

(End of clause)

If the Contractor has knowledge that any actual or potential labor dispute is delaying or threatens to delay the timely performance of this contract, the Contractor shall immediately give notice, including all relevant information, to the Contracting Officer.

(End of clause)

The Contractor agrees not to employ in the performance of this contract any person undergoing a sentence of imprisonment which has been imposed by any court of a State, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, or the Trust Territory of the Pacific Islands. This limitation, however, shall not prohibit the employment by the Contractor in the performance of this contract of persons on parole or probation to work at paid employment during the term of their sentence or persons who have been pardoned or who have served their terms. Nor shall it prohibit the employment by the Contractor in the performance of this contract of persons confined for violation of the laws of any of the States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, or the Trust Territory of the Pacific Islands who are authorized to work at paid employment in the community under the laws of such jurisdiction, if--

(a)(1) The worker is paid or is in an approved work training program on a voluntary basis;

(2) Representatives of local union central bodies or similar labor union organizations have been consulted;

(3) Such paid employment will not result in the displacement of employed workers, or be applied in skills, crafts, or trades in which there is a surplus of available gainful labor in the locality, or impair existing contracts for services; and

(4) The rates of pay and other conditions of employment will not be less than those paid or provided for work of a similar nature in the locality in which the work is being performed; and

(b) The Attorney General of the United States has certified that the work-release laws or regulations of the jurisdiction involved are in conformity with the requirements of Executive Order 11755, as amended by Executive Orders 12608 and 12943.

(End of clause)

(a) Overtime requirements. No Contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics (see Federal Acquisition Regulation (FAR) 22.300) shall require or permit any such laborers or mechanics in any workweek in which the individual is employed on such work to work in excess of 40 hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than 1 1/2 times the basic rate of pay for all hours worked in excess of 40 hours in such workweek.

(b) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the provisions set forth in paragraph (a) of this clause, the Contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such Contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic employed in violation of the provisions set forth in paragraph (a) of this clause in the sum of \$10 for each calendar day on which such

individual was required or permitted to work in excess of the standard workweek of 40 hours without payment of the overtime wages required by provisions set forth in paragraph (a) of this clause.

(c) Withholding for unpaid wages and liquidated damages. The Contracting Officer shall upon his or her own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the Contractor or subcontractor under any such contract or any other Federal contract with the same Prime Contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act which is held by the same Prime Contractor, such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for unpaid wages and liquidated damages as provided in the provisions set forth in paragraph (b) of this clause.

(d) Payrolls and basic records. (1) The Contractor or subcontractor shall maintain payrolls and basic payroll records during the course of contract work and shall preserve them for a period of 3 years from the completion of the contract for all laborers and mechanics working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Nothing in this paragraph shall require the duplication of records required to be maintained for construction work by Department of Labor regulations at 29 CFR 5.5(a)(3) implementing the Davis-Bacon Act.

(2) The records to be maintained under paragraph (d)(1) of this clause shall be made available by the Contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the Contracting Officer or the Department of Labor. The Contractor or subcontractor shall permit such representatives to interview employees during working hours on the job.

(e) Subcontracts. The Contractor or subcontractor shall insert in any subcontracts exceeding \$100,000, the provisions set forth in paragraphs (a) through (e) of this clause and also a clause requiring the subcontractors to include these provisions in any lower tier subcontracts. The Prime Contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the provisions set forth in paragraphs (a) through (e) of this clause.

(End of clause)

28      52.222-6      DAVIS-BACON ACT (FEB 1995)

(a) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the Contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (d) of this clause; also, regular contributions made or costs incurred for more than a weekly period (but not less often

than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such period. Such laborers and mechanics shall be paid not less than the appropriate wage rate and fringe benefits in the wage determination for the classification of work actually performed, without regard to skill, except as provided in the clause entitled Apprentices and Trainees. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein; provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classifications and wage rates conformed under paragraph (b) of this clause) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the Contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(b)(1) The Contracting Officer shall require that any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The Contracting Officer shall approve an additional classification and wage rate and fringe benefits therefor only when all the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination.

(ii) The classification is utilized in the area by the construction industry.

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(iv) With respect to helpers, such a classification prevails in the area in which the work is performed.

(2) If the Contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the Contracting Officer agree on the classification and wage rate (including the amount designated for fringe benefits, where appropriate), a report of the action taken shall be sent by the Contracting Officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator or an authorized representative will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the Contracting Officer or will notify the Contracting Officer within the 30-day period that additional time is necessary.

(3) In the event the Contractor, the laborers or mechanics to be employed in the classification, or their representatives, and the Contracting Officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the Contracting Officer shall refer the questions, including the views of all interested parties and the recommendation of the Contracting Officer, to the Administrator of the Wage and Hour Division for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the Contracting Officer or will notify the Contracting Officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits, where appropriate) determined pursuant to subparagraphs (b)(2) and (b)(3) of this clause shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the



classification.

(c) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the Contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(d) If the Contractor does not make payments to a trustee or other third person, the Contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program; provided, that the Secretary of Labor has found, upon the written request of the Contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the Contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(End of clause)

29      52. 222-7      WITHHOLDING OF FUNDS (FEB 1988)

The Contracting Officer shall, upon his or her own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the Contractor under this contract or any other Federal contract with the same Prime Contractor, or any other Federally assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same Prime Contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the Contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the Contracting Officer may, after written notice to the Contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(End of clause)

30      52. 222-8      PAYROLLS AND BASIC RECORDS (FEB 1988)

(a) Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the work and preserved for a period of 3 years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made, and actual wages paid. Whenever the Secretary of Labor has found, under paragraph (d) of the clause entitled Davis-Bacon Act, that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the Contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing

such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(b)(1) The Contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the Contracting Officer. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under paragraph (a) of this clause. This information may be submitted in any form desired. Optional Form WH-347 (Federal Stock Number 029-005-00014-1) is available for this purpose and may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. The Prime Contractor is responsible for the submission of copies of payrolls by all subcontractors.

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the Contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify--

(i) That the payroll for the payroll period contains the information required to be maintained under paragraph (a) of this clause and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in the Regulations, 29 CFR Part 3; and

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by subparagraph (b)(2) of this clause.

(4) The falsification of any of the certifications in this clause may subject the Contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 3729 of Title 31 of the United States Code.

(c) The Contractor or subcontractor shall make the records required under paragraph (a) of this clause available for inspection, copying, or transcription by the Contracting Officer or authorized representatives of the Contracting Officer or the Department of Labor. The Contractor or subcontractor shall permit the Contracting Officer or representatives of the Contracting Officer or the Department of Labor to interview employees during working hours on the job. If the Contractor or subcontractor fails to submit required records or to make them available, the Contracting Officer may, after written notice to the Contractor, take such action as may be necessary to cause the suspension of any further payment. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(End of clause)

(a) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U. S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the Contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in this paragraph, shall be paid not less than the applicable wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the Contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the Contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(b) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U. S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed in the wage determination unless the Administrator of the Wage and Hour Division determines that there is an

apprenticeship program associated with the corresponding journeyman wage rate in the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate in the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate in the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the Contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(c) Equal employment opportunity. The utilization of apprentices, trainees, and journeymen under this clause shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

(End of clause)

32      52. 222- 10            COMPLIANCE WITH COPELAND ACT REQUIREMENTS (FEB 1988)

The Contractor shall comply with the requirements of 29 CFR Part 3, which are hereby incorporated by reference in this contract.

(End of clause)

33      52. 222- 11            SUBCONTRACTS (LABOR STANDARDS) (FEB 1988)

(a) The Contractor or subcontractor shall insert in any subcontracts the clauses entitled Davis-Bacon Act, Contract Work Hours and Safety Standards Act--Overtime Compensation, Apprentices and Trainees, Payrolls and Basic Records, Compliance with Copeland Act Requirements, Withholding of Funds, Subcontracts (Labor Standards), Contract Termination--Debarment, Disputes Concerning Labor Standards, Compliance with Davis-Bacon and Related Act Regulations, and Certification of Eligibility, and such other clauses as the Contracting Officer may, by appropriate instructions, require, and also a clause requiring subcontractors to include these clauses in any lower tier subcontracts. The Prime Contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with all the contract clauses cited in this paragraph.

(b)(1) Within 14 days after award of the contract, the Contractor shall deliver to the Contracting Officer a completed Statement and Acknowledgment Form (SF 1413) for each subcontract, including the subcontractor's signed and dated acknowledgment that the clauses set forth in paragraph (a) of this clause have been included in the subcontract.

(2) Within 14 days after the award of any subsequently awarded subcontract the Contractor shall deliver to the Contracting Officer an updated completed SF 1413 for such additional subcontract.

(End of clause)

34      52.222-12      CONTRACT TERMINATION--DEBARMENT (FEB 1988)

A breach of the contract clauses entitled Davis-Bacon Act, Contract Work Hours and Safety Standards Act--Overtime Compensation, Apprentices and Trainees, Payrolls and Basic Records, Compliance with Copeland Act Requirements, Subcontracts (Labor Standards), Compliance with Davis-Bacon and Related Act Regulations, or Certification of Eligibility may be grounds for termination of the contract, and for debarment as a Contractor and subcontractor as provided in 29 CFR 5.12.

(End of clause)

35      52.222-13      COMPLIANCE WITH DAVIS-BACON AND RELATED ACT REGULATIONS (FEB 1988)

All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are hereby incorporated by reference in this contract.

(End of clause)

36      52.222-14      DISPUTES CONCERNING LABOR STANDARDS (FEB 1988)

The United States Department of Labor has set forth in 29 CFR Parts 5, 6, and 7 procedures for resolving disputes concerning labor standards requirements. Such disputes shall be resolved in accordance with those procedures and not the Disputes clause of this contract. Disputes within the meaning of this clause include disputes between the Contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees of their representatives.

(End of clause)

37      52.222-15      CERTIFICATION OF ELIGIBILITY (FEB 1988)

(a) By entering into this contract, the Contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the Contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(b) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(c) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

(End of clause)

38      52.222-23      NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY FOR CONSTRUCTION (FEB 1999)

(a) The offeror's attention is called to the Equal Opportunity clause and the Affirmative Action Compliance Requirements for Construction clause of this solicitation.

(b) The goals for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Goals for minority participation for each trade	Goals for female participation for each trade
4.4%	6.9%

These goals are applicable to all the Contractor's construction work performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, the Contractor shall apply the goals established for the geographical area where the work is actually performed. Goals are published periodically in the Federal Register in notice form, and these notices may be obtained from any Office of Federal Contract Compliance Programs office.

(c) The Contractor's compliance with Executive Order 11246, as amended, and the regulations in 41 CFR 60-4 shall be based on (1) its implementation of the Equal Opportunity clause, (2) specific affirmative action obligations required by the clause entitled "Affirmative Action Compliance Requirements for Construction," and (3) its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade. The Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor, or from project to project, for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, Executive Order 11246, as amended, and the regulations in 41 CFR 60-4. Compliance with the goals will be measured against the total work hours performed.

(d) The Contractor shall provide written notification to the Deputy Assistant Secretary for Federal Contract Compliance, U. S. Department of Labor, within 10 working days following award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the--

- (1) Name, address, and telephone number of the subcontractor;
- (2) Employer's identification number of the subcontractor;
- (3) Estimated dollar amount of the subcontract;
- (4) Estimated starting and completion dates of the subcontract; and
- (5) Geographical area in which the subcontract is to be performed.

(e) As used in this Notice, and in any contract resulting from this solicitation, the "covered area" is Owyhee County, Idaho.

(End of provision)

(R 7-2003.14(d) 1978 SEP)

39 52.222-26 EQUAL OPPORTUNITY (FEB 1999)

(a) If, during any 12-month period (including the 12 months preceding the award of this contract), the Contractor has been or is awarded nonexempt Federal contracts and/or subcontracts that have an aggregate value in excess of \$10,000, the Contractor shall comply with subparagraphs (b)(1) through (11) of this clause. Upon request, the Contractor shall provide information necessary to determine the applicability of this clause.

(b) During performance of this contract, the Contractor agrees as follows:

- (1) The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex,

or national origin. However, it shall not be a violation of this clause for the Contractor to extend a publicly announced preference in employment to Indians living on or near an Indian reservation, in connection with employment opportunities on or near an Indian reservation, as permitted by 41 CFR 60-1.5.

(2) The Contractor shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. This shall include, but not be limited to, (i) employment, (ii) upgrading, (iii) demotion, (iv) transfer, (v) recruitment or recruitment advertising, (vi) layoff or termination, (vii) rates of pay or other forms of compensation, and (viii) selection for training, including apprenticeship.

(3) The Contractor shall post in conspicuous places available to employees and applicants for employment the notices to be provided by the Contracting Officer that explain this clause.

(4) The Contractor shall, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

(5) The Contractor shall send, to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, the notice to be provided by the Contracting Officer advising the labor union or workers' representative of the Contractor's commitments under this clause, and post copies of the notice in conspicuous places available to employees and applicants for employment.

(6) The Contractor shall comply with Executive Order 11246, as amended, and the rules, regulations, and orders of the Secretary of Labor.

(7) The Contractor shall furnish to the contracting agency all information required by Executive Order 11246, as amended, and by the rules, regulations, and orders of the Secretary of Labor. The Contractor shall also file Standard Form 100 (EE0-1), or any successor form, as prescribed in 41 CFR part 60-1. Unless the Contractor has filed within the 12 months preceding the date of contract award, the Contractor shall, within 30 days after contract award, apply to either the regional Office of Federal Contract Compliance Programs (OFCCP) or the local office of the Equal Employment Opportunity Commission for the necessary forms.

(8) The Contractor shall permit access to its premises, during normal business hours, by the contracting agency or the OFCCP for the purpose of conducting on-site compliance evaluations and complaint investigations. The Contractor shall permit the Government to inspect and copy any books, accounts, records (including computerized records), and other material that may be relevant to the matter under investigation and pertinent to compliance with Executive Order 11246, as amended, and rules and regulations that implement the Executive Order.

(9) If the OFCCP determines that the Contractor is not in compliance with this clause or any rule, regulation, or order of the Secretary of Labor, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts, under the procedures authorized in Executive Order 11246, as amended. In addition, sanctions may be imposed and remedies invoked against the Contractor as provided in Executive Order 11246, as amended; in the rules, regulations, and orders of the Secretary of

Labor; or as otherwise provided by law.

(10) The Contractor shall include the terms and conditions of subparagraphs (b)(1) through (11) of this clause in every subcontract or purchase order that is not exempted by the rules, regulations, or orders of the Secretary of Labor issued under Executive Order 11246, as amended, so that these terms and conditions will be binding upon each subcontractor or vendor.

(11) The Contractor shall take such action with respect to any subcontract or purchase order as the contracting officer may direct as a means of enforcing these terms and conditions, including sanctions for noncompliance; provided, that if the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of any direction, the Contractor may request the United States to enter into the litigation to protect the interests of the United States.

(c) Notwithstanding any other clause in this contract, disputes relative to this clause will be governed by the procedures in 41 CFR 60-1.1.

(End of clause)

40      52. 222- 27      AFFIRMATIVE ACTION COMPLIANCE REQUIREMENTS FOR  
CONSTRUCTION (FEB 1999)

(a) Definitions.

"Covered area," as used in this clause, means the geographical area described in the solicitation for this contract.

"Deputy Assistant Secretary," as used in this clause, means the Deputy Assistant Secretary for Federal Contract Compliance, U. S. Department of Labor, or a designee.

"Employer's identification number," as used in this clause, means the Federal Social Security number used on the employer's quarterly federal tax return, U. S. Treasury Department Form 941.

"Minority," as used in this clause, means--

(1) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

(2) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands);

(3) Black (all persons having origins in any of the black African racial groups not of Hispanic origin); and

(4) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race).

(b) If the Contractor, or a subcontractor at any tier, subcontracts a portion of the work involving any construction trade, each such subcontract in excess of \$10,000 shall include this clause and the Notice containing the goals for minority and female participation stated in the solicitation for this contract.

(c) If the Contractor is participating in a Hometown Plan (41 CFR 60-4) approved by the U. S. Department of Labor in a covered area, either individually or through an association, its affirmative action obligations on all work in the plan area (including goals) shall comply with the plan for those trades that have unions participating in the plan. Contractors must be able to demonstrate participation in, and compliance with, the provisions of the plan. Each Contractor or subcontractor participating in an approved plan is also required to comply with its obligations under the Equal Opportunity clause, and to make a good faith effort to achieve each



goal under the plan in each trade in which it has employees. The overall good-faith performance by other Contractors or subcontractors toward a goal in an approved plan does not excuse any Contractor's or subcontractor's failure to make good-faith efforts to achieve the plan's goals.

(d) The Contractor shall implement the affirmative action procedures in subparagraphs (g)(1) through (16) of this clause. The goals stated in the solicitation for this contract are expressed as percentages of the total hours of employment and training of minority and female utilization that the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for the geographical area where that work is actually performed. The Contractor is expected to make substantially uniform progress toward its goals in each craft.

(e) Neither the terms and conditions of any collective bargaining agreement, nor the failure by a union with which the Contractor has a collective bargaining agreement, to refer minorities or women shall excuse the Contractor's obligations under this clause, Executive Order 11246, as amended, or the regulations thereunder.

(f) In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

(g) The Contractor shall take affirmative action to ensure equal employment opportunity. The evaluation of the Contractor's compliance with this clause shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully and implement affirmative action steps at least as extensive as the following:

(1) Ensure a working environment free of harassment, intimidation, and coercion at all sites and in all facilities where the Contractor's employees are assigned to work. The Contractor, if possible, will assign two or more women to each construction project. The Contractor shall ensure that foremen, superintendents, and other onsite supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at these sites or facilities.

(2) Establish and maintain a current list of sources for minority and female recruitment. Provide written notification to minority and female recruitment sources and community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

(3) Establish and maintain a current file of the names, addresses, and telephone numbers of each minority and female off-the-street applicant, referrals of minorities or females from unions, recruitment sources, or community organizations, and the action taken with respect to each individual. If an individual was sent to the union hiring hall for referral and not referred back to the Contractor by the union or, if referred back, not employed by the Contractor, this shall be documented in the file, along with whatever additional actions the Contractor may have taken.

(4) Immediately notify the Deputy Assistant Secretary when the union or unions with which the Contractor has a collective bargaining agreement has not referred back to the Contractor a

a minority or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

(5) Develop on-the-job training opportunities and/or participate in training programs for the area that expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under subparagraph (g)(2) of this clause.

(6) Disseminate the Contractor's equal employment policy by--

(i) Providing notice of the policy to unions and to training, recruitment, and outreach programs, and requesting their cooperation in assisting the Contractor in meeting its contract obligations;

(ii) Including the policy in any policy manual and in collective bargaining agreements;

(iii) Publicizing the policy in the company newspaper, annual report, etc.;

(iv) Reviewing the policy with all management personnel and with all minority and female employees at least once a year; and

(v) Posting the policy on bulletin boards accessible to employees at each location where construction work is performed.

(7) Review, at least annually, the Contractor's equal employment policy and affirmative action obligations with all employees having responsibility for hiring, assignment, layoff, termination, or other employment decisions. Conduct review of this policy with all on-site supervisory personnel before initiating construction work at a job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

(8) Disseminate the Contractor's equal employment policy externally by including it in any advertising in the news media, specifically including minority and female news media. Provide written notification to, and discuss this policy with, other Contractors and subcontractors with which the Contractor does or anticipates doing business.

(9) Direct recruitment efforts, both oral and written, to minority, female, and community organizations, to schools with minority and female students, and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than 1 month before the date for acceptance of applications for apprenticeship or training by any recruitment source, send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

(10) Encourage present minority and female employees to recruit minority persons and women. Where reasonable, provide after-school, summer, and vacation employment to minority and female youth both on the site and in other areas of the Contractor's workforce.

(11) Validate all tests and other selection requirements where required under 41 CFR 60-3.

(12) Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities. Encourage these employees to seek or to prepare for, through appropriate training, etc., opportunities for promotion.

(13) Ensure that seniority practices job classifications, work assignments, and other personnel practices do not have a discriminatory effect by continually monitoring all personnel and employment-related

activities to ensure that the Contractor's obligations under this contract are being carried out.

(14) Ensure that all facilities and company activities are nonsegregated except that separate or single-user rest rooms and necessary dressing or sleeping areas shall be provided to assure privacy between the sexes.

(15) Maintain a record of solicitations for subcontracts for minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

(16) Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's equal employment policy and affirmative action obligations.

(h) The Contractor is encouraged to participate in voluntary associations that may assist in fulfilling one or more of the affirmative action obligations contained in subparagraphs (g)(1) through (16) of this clause. The efforts of a contractor association, joint contractor-union, contractor-community, or similar group of which the contractor is a member and participant may be asserted as fulfilling one or more of its obligations under subparagraphs (g)(1) through (16) of this clause, provided the Contractor--

(1) Actively participates in the group;

(2) Makes every effort to ensure that the group has a positive impact on the employment of minorities and women in the industry;

(3) Ensures that concrete benefits of the program are reflected in the Contractor's minority and female workforce participation;

(4) Makes a good-faith effort to meet its individual goals and timetables; and

(5) Can provide access to documentation that demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply is the Contractor's, and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

(i) A single goal for minorities and a separate single goal for women shall be established. The Contractor is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and nonminority. Consequently, the Contractor may be in violation of Executive Order 11246, as amended, if a particular group is employed in a substantially disparate manner.

(j) The Contractor shall not use goals or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

(k) The Contractor shall not enter into any subcontract with any person or firm debarred from Government contracts under Executive Order 11246, as amended.

(l) The Contractor shall carry out such sanctions and penalties for violation of this clause and of the Equal Opportunity clause, including suspension, termination, and cancellation of existing subcontracts, as may be imposed or ordered under Executive Order 11246, as amended, and its implementing regulations, by the OFCCP. Any failure to carry out these sanctions and penalties as ordered shall be a violation of this clause and Executive Order 11246, as amended.

(m) The Contractor in fulfilling its obligations under this clause shall implement affirmative action procedures at least as extensive as those prescribed in paragraph (g) of this clause, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the

Contractor fails to comply with the requirements of Executive Order 11246, as amended, the implementing regulations, or this clause, the Deputy Assistant Secretary shall take action as prescribed in 41 CFR 60-4.8.

(n) The Contractor shall designate a responsible official to--

(1) Monitor all employment-related activity to ensure that the Contractor's equal employment policy is being carried out;

(2) Submit reports as may be required by the Government; and

(3) Keep records that shall at least include for each employee the name, address, telephone number, construction trade, union affiliation (if any), employee identification number, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, separate records are not required to be maintained.

(o) Nothing contained herein shall be construed as a limitation upon the application of other laws that establish different standards of compliance or upon the requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

(End of clause)

41      52. 222-35      AFFIRMATIVE ACTION FOR DISABLED VETERANS AND VETERANS OF  
THE VIETNAM ERA (APR 1998)

(a) Definitions. As used in this clause--

"All employment openings" includes all positions except executive and top management, those positions that will be filled from within the contractor's organization, and positions lasting 3 days or less. This term includes full-time employment, temporary employment of more than 3 days' duration, and part-time employment.

"Appropriate office of the State employment service system" means the local office of the Federal-State national system of public employment offices with assigned responsibility to serve the area where the employment opening is to be filled, including the District of Columbia, Guam, the Commonwealth of Puerto Rico, and the Virgin Islands.

"Positions that will be filled from within the Contractor's organization" means employment openings for which no consideration will be given to persons outside the Contractor's organization (including any affiliates, subsidiaries, and parent companies) and includes any openings that the Contractor proposes to fill from regularly established "recall" lists. The exception does not apply to a particular opening once an employer decides to consider applicants outside of its organization.

"Veteran of the Vietnam era" means a person who--

(1) Served on active duty for a period of more than 180 days, any part of which occurred between August 5, 1964, and May 7, 1975, and was discharged or released therefrom with other than a dishonorable discharge; or

(2) Was discharged or released from active duty for a service-connected disability if any part of such active duty was performed between August 5, 1964, and May 7, 1975.

(b) General. (1) Regarding any position for which the employee or applicant for employment is qualified, the Contractor shall not

discriminate against the individual because the individual is a disabled veteran or a veteran of the Vietnam era. The Contractor agrees to take affirmative action to employ, advance in employment, and otherwise treat qualified disabled veterans and veterans of the Vietnam era without discrimination based upon their disability or veterans' status in all employment practices such as--

- (i) Employment;
- (ii) Upgrading;
- (iii) Demotion or transfer;
- (iv) Recruitment;
- (v) Advertising;
- (vi) Layoff or termination;
- (vii) Rates of pay or other forms of compensation; and
- (viii) Selection for training, including apprenticeship.

(2) The Contractor agrees to comply with the rules, regulations, and relevant orders of the Secretary of Labor (Secretary) issued under the Vietnam Era Veterans' Readjustment Assistance Act of 1972 (the Act), as amended.

(c) Listing openings. (1) The Contractor agrees to list all employment openings existing at contract award or occurring during contract performance, at an appropriate office of the State employment service system in the locality where the opening occurs. These openings include those occurring at any Contractor facility, including one not connected with performing this contract. An independent corporate affiliate is exempt from this requirement.

(2) State and local government agencies holding Federal contracts of \$10,000 or more shall also list all employment openings with the appropriate office of the State employment service.

(3) The listing of employment openings with the State employment service system is required at least concurrently with using any other recruitment source or effort and involves the obligations of placing a bona fide job order, including accepting referrals of veterans and nonveterans. This listing does not require hiring any particular job applicant or hiring from any particular group of job applicants and is not intended to relieve the Contractor from any requirements of Executive orders or regulations concerning nondiscrimination in employment.

(4) Whenever the Contractor becomes contractually bound to the listing terms of this clause, it shall advise the State employment service system, in each State where it has establishments, of the name and location of each hiring location in the State. As long as the Contractor is contractually bound to these terms and has so advised the State system, it need not advise the State system of subsequent contracts. The Contractor may advise the State system when it is no longer bound by this contract clause.

(d) Applicability. This clause does not apply to the listing of employment openings that occur and are filled outside the 50 States, the District of Columbia, the Commonwealth of Puerto Rico, Guam, and the Virgin Islands.

(e) Postings. (1) The Contractor agrees to post employment notices stating (i) the Contractor's obligation under the law to take affirmative action to employ and advance in employment qualified disabled veterans and veterans of the Vietnam era, and (ii) the rights of applicants and employees.

(2) These notices shall be posted in conspicuous places that are available to employees and applicants for employment. They shall be in a form prescribed by the Deputy Assistant Secretary for Federal

Contract Compliance Programs, Department of Labor (Deputy Assistant Secretary), and provided by or through the Contracting Officer.

(3) The Contractor shall notify each labor union or representative of workers with which it has a collective bargaining agreement or other contract understanding, that the Contractor is bound by the terms of the Act, and is committed to take affirmative action to employ, and advance in employment, qualified disabled veterans and veterans of the Vietnam era.

(f) Noncompliance. If the Contractor does not comply with the requirements of this clause, appropriate actions may be taken under the rules, regulations, and relevant orders of the Secretary issued pursuant to the Act.

(g) Subcontracts. The Contractor shall include the terms of this clause in every subcontract or purchase order of \$10,000 or more unless exempted by rules, regulations, or orders of the Secretary. The Contractor shall act as specified by the Deputy Assistant Secretary to enforce the terms, including action for noncompliance.

(End of clause)

42      52. 222- 36      AFFIRMATIVE ACTION FOR WORKERS WITH DISABILITIES  
(JUN 1998)

(a) General. (1) Regarding any position for which the employee or applicant for employment is qualified, the Contractor shall not discriminate against any employee or applicant because of physical or mental disability. The Contractor agrees to take affirmative action to employ, advance in employment, and otherwise treat qualified individuals with disabilities without discrimination based upon their physical or mental disability in all employment practices such as--

(i) Recruitment, advertising, and job application procedures;

(ii) Hiring, upgrading, promotion, award of tenure, demotion, transfer, layoff, termination, right of return from layoff, and rehiring;

(iii) Rates of pay or any other form of compensation and changes in compensation;

(iv) Job assignments, job classifications, organizational structures, position descriptions, lines of progression, and seniority lists;

(v) Leaves of absence, sick leave, or any other leave;

(vi) Fringe benefits available by virtue of employment, whether or not administered by the Contractor;

(vii) Selection and financial support for training, including apprenticeships, professional meetings, conferences, and other related activities, and selection for leaves of absence to pursue training;

(viii) Activities sponsored by the Contractor, including social or recreational programs; and

(ix) Any other term, condition, or privilege of employment.

(2) The Contractor agrees to comply with the rules, regulations, and relevant orders of the Secretary of Labor (Secretary) issued under the Rehabilitation Act of 1973 (29 U.S.C. 793) (the Act), as amended.

(b) Postings. (1) The Contractor agrees to post employment notices stating--

(i) The Contractor's obligation under the law to take

affirmative action to employ and advance in employment qualified individuals with disabilities; and

(ii) The rights of applicants and employees.

(2) These notices shall be posted in conspicuous places that are available to employees and applicants for employment. The Contractor shall ensure that applicants and employees with disabilities are informed of the contents of the notice (e.g., the Contractor may have the notice read to a visually disabled individual, or may lower the posted notice so that it might be read by a person in a wheelchair). The notices shall be in a form prescribed by the Deputy Assistant Secretary for Federal Contract Compliance of the U.S. Department of Labor (Deputy Assistant Secretary) and shall be provided by or through the Contracting Officer.

(3) The Contractor shall notify each labor union or representative of workers with which it has a collective bargaining agreement or other contract understanding, that the Contractor is bound by the terms of Section 503 of the Act and is committed to take affirmative action to employ, and advance in employment, qualified individuals with physical or mental disabilities.

(c) Noncompliance. If the Contractor does not comply with the requirements of this clause, appropriate actions may be taken under the rules, regulations, and relevant orders of the Secretary issued pursuant to the Act.

(d) Subcontracts. The Contractor shall include the terms of this clause in every subcontract or purchase order in excess of \$10,000 unless exempted by rules, regulations, or orders of the Secretary. The Contractor shall act as specified by the Deputy Assistant Secretary to enforce the terms, including action for noncompliance.

(End of clause)

43      52. 222-37      EMPLOYMENT REPORTS ON DISABLED VETERANS AND VETERANS OF  
THE VIETNAM ERA (JAN 1999)

(a) Unless the Contractor is a State or local government agency, the Contractor shall report at least annually, as required by the Secretary of Labor, on--

(1) The number of disabled veterans and the number of veterans of the Vietnam era in the workforce of the Contractor by job category and hiring location; and

(2) The total number of new employees hired during the period covered by the report, and of that total, the number of disabled veterans, and the number of veterans of the Vietnam era.

(b) The above items shall be reported by completing the form entitled "Federal Contractor Veterans' Employment Report VETS-100."

(c) Reports shall be submitted no later than September 30 of each year beginning September 30, 1988.

(d) The employment activity report required by paragraph (a)(2) of this clause shall reflect total hires during the most recent 12-month period as of the ending date selected for the employment profile report required by paragraph (a)(1) of this clause. Contractors may select an ending date:

(1) As of the end of any pay period during the period January through March 1st of the year the report is due, or (2) as of December 31, if the contractor has previous written approval from the Equal Employment Opportunity Commission to do so for purposes of submitting the Employer Information Report EE0-1 (Standard Form 100).

(e) The count of veterans reported according to paragraph (a) of this

clause shall be based on voluntary disclosure. Each Contractor subject to the reporting requirements at 38 U.S.C. 4212 shall invite all disabled veterans and veterans of the Vietnam era who wish to benefit under the affirmative action program at 38 U.S.C. 4212 to identify themselves to the Contractor. The invitation shall state that the information is voluntarily provided; that the information will be kept confidential; that disclosure or refusal to provide the information will not subject the applicant or employee to any adverse treatment; and that the information will be used only in accordance with the regulations promulgated under 38 U.S.C. 4212.

(f) Subcontracts. The Contractor shall include the terms of this clause in every subcontract or purchase order of \$10,000 or more unless exempted by rules, regulations, or orders of the Secretary.

(End of clause)

44 52.223-2 CLEAN AIR AND WATER (APR 1984)

(a) "Air Act", as used in this clause, means the Clean Air Act (42 U.S.C. 7401, et seq.).

"Clean air standards," as used in this clause, means--

(1) Any enforceable rules, regulations, guidelines, standards, limitations, orders, controls, prohibitions, work practices, or other requirements contained in, issued under, or otherwise adopted under the Air Act or Executive Order 11738;

(2) An applicable implementation plan as described in section 110(d) of the Air Act (42 U.S.C. 7410(d));

(3) An approved implementation procedure or plan under section 111(c) or section 111(d) of the Air Act (42 U.S.C. 7411(c) or (d)); or

(4) An approved implementation procedure under section 112(d) of the Air Act (42 U.S.C. 7412(d)).

"Clean water standards," as used in this clause, means any enforceable limitation, control, condition, prohibition, standard, or other requirement promulgated under the Water Act or contained in a permit issued to a discharger by the EPA or by a State under an approved program, as authorized by section 402 of the Water Act (33 U.S.C. 1342), or by local government to ensure compliance with pretreatment regulations as required by section 307 of the Water Act (33 U.S.C. 1317).

"Compliance," as used in this clause, means compliance with--

(1) Clean air or water standards; or

(2) A schedule or plan ordered or approved by a court of competent jurisdiction, the EPA, or an air or water pollution control agency under the requirements of the Air Act or Water Act and related regulations.

"Facility," as used in this clause, means any building, plant, installation, structure, mine, vessel or other floating craft, location, or site of operations, owned, leased, or supervised by a Contractor or subcontractor, used in the performance of a contract or subcontract. When a location or site of operations includes more than one building, plant, installation, or structure, the entire location or site shall be deemed a facility except when the Administrator, or a designee, of the EPA determines that independent facilities are collocated in one geographical area.

"Water Act," as used in this clause, means Clean Water Act (33 U.S.C. 1251, et seq.).

(b) The Contractor agrees--

(1) To comply with all the requirements of section 114 of the Clean Air Act (42 U.S.C. 7414) and section 308 of the Clean Water Act (33



U.S.C. 1318) relating to inspection, monitoring, entry, reports, and information, as well as other requirements specified in section 114 and section 308 of the Air Act and the Water Act, and all regulations and guidelines issued to implement those acts before the award of this contract;

(2) That no portion of the work required by this prime contract will be performed in a facility listed on the EPA List of Violating Facilities on the date when this contract was awarded unless and until the EPA eliminates the name of the facility from the listing;

(3) To use best efforts to comply with clean air standards and clean water standards at the facility in which the contract is being performed; and

(4) To insert the substance of this clause into any nonexempt subcontract, including this subparagraph (b)(4).

(End of clause)

(R 7-103.29 1975 OCT)

(R 1-1.2302)

45      52.223-5      POLLUTION PREVENTION AND RIGHT-TO-KNOW INFORMATION  
(APR 1998)

(a) Executive Order 12856 of August 3, 1993, requires Federal facilities to comply with the provisions of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) (42 U.S.C. 11001-11050) and the Pollution Prevention Act of 1990 (PPA) (42 U.S.C. 13101-13109).

(b) The Contractor shall provide all information needed by the Federal facility to comply with the emergency planning reporting requirements of Section 302 of EPCRA; the emergency notice requirements of Section 304 of EPCRA; the list of Material Data Safety Sheets required by Section 311 of EPCRA; the emergency and hazardous chemical inventory forms of Section 312 of EPCRA; the toxic chemical release inventory of Section 313 of EPCRA, which includes the reduction and recycling information required by Section 6607 of PPA; and the toxic chemical reduction goals requirements of Section 3-302 of Executive Order 12856.

(End of clause)

46      52.223-6      DRUG-FREE WORKPLACE (JAN 1997)

(a) Definitions. As used in this clause--

"Controlled substance" means a controlled substance in schedules I through V of section 202 of the Controlled Substances Act (21 U.S.C. 812) and as further defined in regulation at 21 CFR 1308.11 - 1308.15.

"Conviction" means a finding of guilt (including a plea of nolo contendere) or imposition of sentence, or both, by any judicial body charged with the responsibility to determine violations of the Federal or State criminal drug statutes.

"Criminal drug statute" means a Federal or non-Federal criminal statute involving the manufacture, distribution, dispensing, possession or use of any controlled substance.

"Drug-free workplace" means the site(s) for the performance of work done by the Contractor in connection with a specific contract at which employees of the Contractor are prohibited from engaging in the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance.

"Employee" means an employee of a Contractor directly engaged in the performance of work under a Government contract. "Directly engaged" is defined to include all direct cost employees and any other Contractor

employee who has other than a minimal impact or involvement in contract performance.

"Individual" means an offeror/contractor that has no more than one employee including the offeror/contractor.

(b) The Contractor, if other than an individual, shall--within 30 days after award (unless a longer period is agreed to in writing for contracts of 30 days or more performance duration), or as soon as possible for contracts of less than 30 days performance duration--

(1) Publish a statement notifying its employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the Contractor's workplace and specifying the actions that will be taken against employees for violations of such prohibition;

(2) Establish an ongoing drug-free awareness program to inform such employees about--

(i) The dangers of drug abuse in the workplace;

(ii) The Contractor's policy of maintaining a drug-free workplace;

(iii) Any available drug counseling, rehabilitation, and employee assistance programs; and

(iv) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;

(3) Provide all employees engaged in performance of the contract with a copy of the statement required by subparagraph (b)(1) of this clause;

(4) Notify such employees in writing in the statement required by subparagraph (b)(1) of this clause that, as a condition of continued employment on this contract, the employee will--

(i) Abide by the terms of the statement; and

(ii) Notify the employer in writing of the employee's conviction under a criminal drug statute for a violation occurring in the workplace no later than 5 days after such conviction.

(5) Notify the Contracting Officer in writing within 10 days after receiving notice under subdivision (b)(4)(ii) of this clause, from an employee or otherwise receiving actual notice of such conviction. The notice shall include the position title of the employee;

(6) Within 30 days after receiving notice under subdivision (b)(4)(ii) of this clause of a conviction, take one of the following actions with respect to any employee who is convicted of a drug abuse violation occurring in the workplace:

(i) Taking appropriate personnel action against such employee, up to and including termination; or

(ii) Require such employee to satisfactorily participate in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency, and

(7) Make a good faith effort to maintain a drug-free workplace through implementation of subparagraphs (b)(1) through (b)(6) of this clause.

(c) The Contractor, if an individual, agrees by award of the contract or acceptance of a purchase order, not to engage in the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance while performing this contract.

(d) In addition to other remedies available to the Government, the Contractor's failure to comply with the requirements of paragraph (b) or (c) of this clause may, pursuant to FAR 23.506, render the Contractor subject to suspension of contract payments, termination of the contract for default, and suspension or debarment.

(End of clause)

(a) Unless otherwise exempt, the Contractor, as owner or operator of a facility used in the performance of this contract, shall file by July 1 for the prior calendar year an annual Toxic Chemical Release Inventory Form (Form R) as described in sections 313(a) and (g) of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) (42 U.S.C. 11023(a) and (g)), and section 6607 of the Pollution Prevention Act of 1990 (PPA) (42 U.S.C. 13106). The Contractor shall file, for each facility subject to the Form R filing and reporting requirements, the annual Form R throughout the life of the contract.

(b) A Contractor owned or operated facility used in the performance of this contract is exempt from the requirement to file an annual Form R if--

(1) The facility does not manufacture, process, or otherwise use any toxic chemicals listed under section 313(c) of EPCRA, 42 U.S.C. 11023(c);

(2) The facility does not have 10 or more full-time employees as specified in section 313(b)(1)(A) of EPCRA, 42 U.S.C. 11023(b)(1)(A);

(3) The facility does not meet the reporting thresholds of toxic chemicals established under section 313(f) of EPCRA, 42 U.S.C. 11023(f) (including the alternate thresholds at 40 CFR 372.27, provided an appropriate certification form has been filed with EPA);

(4) The facility does not fall within Standard Industrial Classification Code (SIC) designations 20 through 39 as set forth in Section 19.102 of the Federal Acquisition Regulation (FAR); or

(5) The facility is not located within any State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, Guam, American Samoa, the United States Virgin Islands, the Northern Mariana Islands, or any other territory or possession over which the United States has jurisdiction.

(c) If the Contractor has certified to an exemption in accordance with one or more of the criteria in paragraph (b) of this clause, and after award of the contract circumstances change so that any of its owned or operated facilities used in the performance of this contract is no longer exempt--

(1) The Contractor shall notify the Contracting Officer; and

(2) The Contractor, as owner or operator of a facility used in the performance of this contract that is no longer exempt, shall (i) submit a Toxic Chemical Release Inventory Form (Form R) on or before July 1 for the prior calendar year during which the facility becomes eligible; and (ii) continue to file the annual Form R for the life of the contract for such facility.

(d) The Contracting Officer may terminate this contract or take other action as appropriate, if the Contractor fails to comply accurately and fully with the EPCRA and PPA toxic chemical release filing and reporting requirements.

(e) Except for acquisitions of commercial items as defined in FAR Part 2, the Contractor shall--

(1) For competitive subcontracts expected to exceed \$100,000 (including all options), include a solicitation provision substantially the same as the provision at FAR 52.223-13, Certification of Toxic Chemical Release Reporting; and

(2) Include in any resultant subcontract exceeding \$100,000 (including all options), the substance of this clause, except this paragraph (e).

(End of clause)

(a) Definitions.

(1) "Employee in a sensitive position," as used in this clause, means an employee who has been granted access to classified information; or employees in other positions that the Contractor determines involve national security, health or safety, or functions other than the foregoing requiring a high degree of trust and confidence.

(2) "Illegal drugs," as used in this clause, means controlled substances included in Schedules I and II, as defined by section 802(6) of Title 21 of the United States Code, the possession of which is unlawful under Chapter 13 of that Title. The term "illegal drugs" does not mean the use of a controlled substance pursuant to a valid prescription or other uses authorized by law.

(b) The Contractor agrees to institute and maintain a program for achieving the objective of a drug-free work force. While this clause defines criteria for such a program, contractors are encouraged to implement alternative approaches comparable to the criteria in paragraph (c) that are designed to achieve the objectives of this clause.

(c) Contractor programs shall include the following, or appropriate alternatives:

(1) Employee assistance programs emphasizing high level direction, education, counseling, rehabilitation, and coordination with available community resources;

(2) Supervisory training to assist in identifying and addressing illegal drug use by Contractor employees;

(3) Provision for self-referrals as well as supervisory referrals to treatment with maximum respect for individual confidentiality consistent with safety and security issues;

(4) Provision for identifying illegal drug users, including testing on a controlled and carefully monitored basis. Employee drug testing programs shall be established taking account of the following:

(i) The Contractor shall establish a program that provides for testing for the use of illegal drugs by employees in sensitive positions. The extent of and criteria for such testing shall be determined by the Contractor based on considerations that include the nature of the work being performed under the contract, the employee's duties, the efficient use of Contractor resources, and the risks to health, safety, or national security that could result from the failure of an employee adequately to discharge his or her position.

(ii) In addition, the Contractor may establish a program for employee drug testing--

(A) When there is a reasonable suspicion that an employee uses illegal drugs; or

(B) When an employee has been involved in an accident or unsafe practice;

(C) As part of or as a follow-up to counseling or rehabilitation for illegal drug use;

(D) As part of a voluntary employee drug testing program.

(iii) The Contractor may establish a program to test applicants for employment for illegal drug use.

(iv) For the purpose of administering this clause, testing for illegal drugs may be limited to those substances for which testing is prescribed by section 2.1 of Subpart B of the "Mandatory Guidelines for Federal Workplace Drug Testing Programs" (53 FR 11980 (April 11 1988)), issued by the Department of Health and Human Services.

(d) Contractors shall adopt appropriate personnel procedures to deal with

employees who are found to be using drugs illegally. Contractors shall not allow any employee to remain on duty or perform in a sensitive position who is found to use illegal drugs until such time as the Contractor, in accordance with procedures established by the Contractor, determines that the employee may perform in such a position.

(e) The provisions of this clause pertaining to drug testing programs shall not apply to the extent they are inconsistent with state or local law, or with an existing collective bargaining agreement; provided that with respect to the latter, the Contractor agrees that those issues that are in conflict will be a subject of negotiation at the next collective bargaining session.

(End of clause)

49      52. 225- 11      RESTRICTIONS ON CERTAIN FOREIGN PURCHASES (AUG 1998)

(a) Unless advance written approval of the Contracting Officer is obtained, the Contractor shall not acquire, for use in the performance of this contract, any supplies or services originating from sources within, or that were located in or transported from or through, countries whose products are banned from importation into the United States by Executive order or regulations of the Office of Foreign Assets Control, Department of the Treasury. Those countries include Cuba, Iran, Iraq, Libya, North Korea, and Sudan.

(b) The Contractor shall not acquire for use in the performance of this contract any supplies or services from entities controlled by the Government of Iraq.

(c) The Contractor agrees to insert the provisions of this clause, including this paragraph (c), in all subcontracts hereunder.

(End of clause)

50      52. 225- 15      BUY AMERICAN ACT--CONSTRUCTION MATERIALS UNDER TRADE AGREEMENTS ACT AND NORTH AMERICAN FREE TRADE AGREEMENT (JUN 1997)

(a) Definitions. As used in this clause--

"Components" means those articles, materials, and supplies incorporated directly into construction materials.

"Construction material" means an article, material, or supply brought to the construction site for incorporation into the building or work. Construction material also includes an item brought to the site pre-assembled from articles, materials, or supplies. However, emergency life safety systems, such as emergency lighting, fire alarm, and audio evacuation systems, which are discrete systems incorporated into a public building or work and which are produced as a complete system, shall be evaluated as a single and distinct construction material regardless of when or how the individual parts or components of such systems are delivered to the construction site.

"Designated country construction material" means a construction material that (a) is wholly the growth, product, or manufacture of a designated country (as defined at FAR 25.401), or (b) in the case of a construction material which consists in whole or in part of materials from another country or instrumentality, has been substantially transformed in a designated country into a new and different construction material distinct from the materials from which it was transformed.

"Domestic construction material" means (1) an unmanufactured construction

material mined or produced in the United States, or (2) a construction material manufactured in the United States, if the cost of its components mined, produced, or manufactured in the United States exceeds 50 percent of the cost of all its components. Components of foreign origin of the same class or kind as the construction materials determined to be unavailable pursuant to subparagraph 25.202(a)(2) of the Federal Acquisition Regulation (FAR) shall be treated as domestic.

"North American Free Trade Agreement (NAFTA) country" means Canada or Mexico.

"NAFTA country construction material" means a construction material that (a) is wholly the growth, product, or manufacture of a NAFTA country, or (b) in the case of a construction material which consists in whole or in part of materials from another country or instrumentality, has been substantially transformed in a NAFTA country into a new and different construction material distinct from the materials from which it was transformed.

(b)(1) The Buy American Act (41 U.S.C. 10a--10d) requires that only domestic construction material be used in performing this contract, except as provided in paragraphs (b)(2), (b)(3), and (b)(4) of this clause.

(2) The Trade Agreements Act and the North American Free Trade Agreement (NAFTA) provide that designated country and NAFTA country construction materials are exempted from application of the Buy American Act.

(3) The requirement in paragraph (b)(1) of this clause does not apply to the excepted construction material or components listed by the Government as follows:

%%Insert list of applicable accepted materials or indicate "none"  
none

(4) Other foreign construction material may be added to the list in paragraph (b)(3) of this clause if the Government determines that--

(i) The cost would be unreasonable (the cost of a particular domestic construction material shall be determined to be unreasonable when the cost of such material exceeds the cost of foreign material by more than 6 percent, unless the agency head determines a higher percentage to be appropriate);

(ii) The application of the restriction of the Buy American Act to a particular construction material would be impracticable or inconsistent with the public interest; or (iii) The construction material is not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities of a satisfactory quality.

(5) The Contractor agrees that only domestic construction materials, NAFTA country construction materials, or designated country construction materials will be used by the Contractor, subcontractors, material men, and suppliers in the performance of this contract, except for foreign construction materials, if any, listed in paragraph (b)(3) of this clause.

(c) Request for determination.

(1) Contractors requesting to use foreign construction material under paragraph (b)(4) of this clause shall provide adequate information for Government evaluation of the request for a determination regarding the inapplicability of the Buy American Act. Each submission shall include a description of the foreign and domestic construction materials, including unit of measure, quantity, price, time of delivery or availability, location of the construction project, name and address of the proposed contractor, and a detailed justification of the reason for use of foreign materials cited in accordance with paragraph (b)(4) of this clause. A submission based on unreasonable cost shall include a reasonable survey

of the market and a completed price comparison table in the format in paragraph (d) of this clause. The price of construction material shall include all delivery costs to the construction site and any applicable duty (whether or not a duty-free certificate may be issued).

(2) If the Government determines after contract award that an exception to the Buy American Act applies, the contract shall be modified to allow use of the foreign construction material, and adequate consideration shall be negotiated. However, when the basis for the exception is the unreasonable price of a domestic construction material, adequate consideration shall not be less than the differential established in paragraph (b)(4)(i) of this clause.

(3) If the Government does not determine that an exception to the Buy American Act applies, the use of that particular foreign construction material will be a failure to comply with the Act.

(d) For evaluation of requests under paragraph (c) of this clause based on unreasonable cost, the following information and any applicable supporting data based on the survey of suppliers shall be included in the request:

Foreign and Domestic Construction Materials Price Comparison

Construction material description	Unit of measure	Quantity	Price (dollars) +
-----			
Item 1:			
Foreign construction material.....	.....	.....	.....
Domestic construction material.....	.....	.....	.....
Item 2:			
Foreign construction material.....	.....	.....	.....
Domestic construction material.....	.....	.....	.....

List name, address, telephone number, and contact for suppliers surveyed. Attach copy of response; if oral, attach summary. Include other applicable supporting information.

+ Include all delivery costs to the construction site and any applicable duty (whether or not a duty-free entry certificate is issued).

(End of clause)

51      52. 226-1      UTILIZATION OF INDIAN ORGANIZATIONS AND INDIAN-OWNED ECONOMIC ENTERPRISES (MAY 1999)

(a) For Department of Defense contracts, this clause applies only if the contract includes a subcontracting plan incorporated under the terms of the clause at 52.219-9, Small Business Subcontracting Plan. It does not apply to contracts awarded based on a subcontracting plan submitted and approved under paragraph (g) of the clause at 52.219.

(b) Definitions. As used in this clause:

"Indian" means any person who is a member of any Indian tribe, band, group, pueblo or community which is recognized by the Federal Government as eligible for services from the Bureau of Indian Affairs (BIA) in accordance with 25 U.S.C. 1452(c) and any "Native" as defined in the Alaska Native Claims Settlement Act (43 U.S.C. 1601).

"Indian organization" means the governing body of any Indian tribe or entity established or recognized by the governing body of an Indian tribe for the purposes of 25 U.S.C., Chapter 17.

"Indian-owned economic enterprise" means any Indian-owned (as determined by the Secretary of the Interior) commercial, industrial, or business

activity established or organized for the purpose of profit, provided that Indian ownership shall constitute not less than 51 percent of the enterprise.

"Indian tribe" means any Indian tribe, band, group, pueblo or community, including native villages and native groups (including corporations organized by Kenai, Juneau, Sitka, and Kodiak) as defined in the Alaska Native Claims Settlement Act, which is recognized by the Federal Government as eligible for services from BIA in accordance with 25 U.S.C. 1542(c).

"Interested party" means a prime contractor or an actual or prospective offeror whose direct economic interest would be affected by the award of a subcontract or by the failure to award a subcontract.

(c) The Contractor agrees to use its best efforts to give Indian organizations and Indian-owned economic enterprises (25 U.S.C. 1544) the maximum practicable opportunity to participate in the subcontracts it awards to the fullest extent consistent with efficient performance of its contract.

(1) The Contracting Officer and the Contractor, acting in good faith, may rely on the representation of an Indian organization or Indian-owned economic enterprise as to its eligibility, unless an interested party challenges its status or the Contracting Officer has independent reason to question that status. In the event of a challenge to the representation of a subcontractor, the Contracting Officer shall refer the matter to the U.S. Department of the Interior, Bureau of Indian Affairs (BIA), Attn: Chief, Division of Contracting and Grants Administration, 1849 C Street, NW, MS-334A-SIB, Washington, DC 20245. The BIA will determine the eligibility and notify the Contracting Officer. The 5 percent incentive payment will not be made within 50 working days of subcontract award or while a challenge is pending. If a subcontractor is determined to be an ineligible participant, no incentive payment will be made under the Indian Incentive Program.

(2) The Contractor may request an adjustment under the Indian Incentive Program to the following:

- (i) The estimated cost of a cost-type contract.
- (ii) The target cost of a cost-plus-incentive-fee prime contract.
- (iii) The target cost and ceiling price of a fixed-price incentive prime contract.
- (iv) The price of a firm-fixed-price prime contract.

(3) The amount of the equitable adjustment to the prime contract shall be 5 percent of the estimated cost, target cost or firm-fixed-price included in the subcontract initially awarded to the Indian organization or Indian-owned economic enterprise.

(4) The Contractor has the burden of proving the amount claimed and must assert its request for an adjustment prior to completion of contract performance.

(d) The Contracting Officer, subject to the terms and conditions of the contract and the availability of funds, shall authorize an incentive payment of 5 percent of the amount paid to the subcontractor. Contracting Officers shall seek funding in accordance with agency procedures. The Contracting Officer's decision is final and not subject to the Disputes clause of this contract.

(End of clause)



(a) The Government authorizes and consents to all use and manufacture, in performing this contract or any subcontract at any tier, of any invention described in and covered by a United States patent (1) embodied in the structure or composition of any article the delivery of which is accepted by the Government under this contract or (2) used in machinery, tools, or methods whose use necessarily results from compliance by the Contractor or a subcontractor with (i) specifications or written provisions forming a part of this contract or (ii) specific written instructions given by the Contracting Officer directing the manner of performance. The entire liability to the Government for infringement of a patent of the United States shall be determined solely by the provisions of the indemnity clause, if any, included in this contract or any subcontract hereunder (including any lower-tier subcontract), and the Government assumes liability for all other infringement to the extent of the authorization and consent hereinabove granted.

(b) The Contractor agrees to include, and require inclusion of, this clause, suitably modified to identify the parties, in all subcontracts at any tier for supplies or services (including construction, architect-engineer services, and materials, supplies, models, samples, and design or testing services expected to exceed the simplified acquisition threshold); however, omission of this clause from any subcontract, including those at or below the simplified acquisition threshold, does not affect this authorization and consent.

(End of clause)

Except as otherwise provided, the Contractor agrees to indemnify the Government and its officers, agents, and employees against liability, including costs and expenses, for infringement upon any United States patent (except a patent issued upon an application that is now or may hereafter be withheld from issue pursuant to a Secrecy Order under 35 U. S. C. 181) arising out of performing this contract or out of the use or disposal by or for the account of the Government of supplies furnished or work performed under this contract.

(End of clause)

(R 7-602.16 1964 JUN)

All designs, drawings, specifications, notes and other works developed in the performance of this contract shall become the sole property of the Government and may be used on any other design or construction without additional compensation to the Contractor. The Government shall be considered the "person for whom the work was prepared" for the purpose of authorship in any copyrightable work under 17 U. S. C. 201(b). With respect thereto, the Contractor agrees not to assert or authorize others to assert any rights nor establish any claim under the design patent or copyright laws. The Contractor for a period of three (3) years after completion of the project agrees to furnish all retained works on the request of the Contracting Officer. Unless otherwise provided in this contract, the

Contractor shall have the right to retain copies of all works beyond such period.

(End of clause)

55      52. 227- 7033      RIGHTS IN SHOP DRAWINGS (APR 1966)

(a) Shop drawings for construction means drawings, submitted to the Government by the Construction Contractor, subcontractor or any lower-tier subcontractor pursuant to a construction contract, showing in detail (i) the proposed fabrication and assembly of structural elements and (ii) the installation (i.e., form, fit, and attachment details) of materials or equipment. The Government may duplicate, use, and disclose in any manner and for any purpose shop drawings delivered under this contract.

(b) This clause, including this paragraph (b), shall be included in all subcontracts hereunder at any tier.

(End of clause)

56      52. 228- 2      ADDITIONAL BOND SECURITY (OCT 1997)

The Contractor shall promptly furnish additional security required to protect the Government and persons supplying labor or materials under this contract if--

(a) Any surety upon any bond, or issuing financial institution for other security, furnished with this contract becomes unacceptable to the Government;

(b) Any surety fails to furnish reports on its financial condition as required by the Government;

(c) The contract price is increased so that the penal sum of any bond becomes inadequate in the opinion of the Contracting Officer; or

(d) An irrevocable letter of credit (ILC) used as security will expire before the end of the period of required security. If the Contractor does not furnish an acceptable extension or replacement ILC, or other acceptable substitute, at least 30 days before an ILC's scheduled expiration, the Contracting officer has the right to immediately draw on the ILC.

(End of clause)

57      52. 228- 12      PROSPECTIVE SUBCONTRACTOR REQUESTS FOR BONDS (OCT 1995)

In accordance with Section 806(a)(3) of Pub. L. 102-190, as amended by Sections 2091 and 8105 of Pub. L. 103-355, upon the request of a prospective subcontractor or supplier offering to furnish labor or material for the performance of this contract for which a payment bond has been furnished to the Government pursuant to the Miller Act, the Contractor shall promptly provide a copy of such payment bond to the requester.

(End of clause)

58      52. 229- 3      FEDERAL, STATE, AND LOCAL TAXES (JAN 1991)

(a) "Contract date," as used in this clause, means the date set for bid opening or, if this is a negotiated contract or a modification, the effective date of this contract or modification.

"All applicable Federal, State, and local taxes and duties," as used in this clause, means all taxes and duties, in effect on the contract date,

"After-imposed Federal tax," as used in this clause, means any new or increased Federal excise tax or duty, or tax that was exempted or excluded on the contract date but whose exemption was later revoked or reduced during the contract period, on the transactions or property covered by this contract that the Contractor is required to pay or bear as the result of legislative, judicial, or administrative action taking effect after the contract date. It does not include social security tax or other employment taxes.

(b) The contract price includes all applicable Federal, State, and local taxes and duties.

(d) The contract price shall be decreased by the amount of any after-relieved Federal tax.

(f) No adjustment shall be made in the contract price under this clause unless the amount of the adjustment exceeds \$250.

(h) The Government shall, without liability, furnish evidence appropriate to establish exemption from any Federal, State, or local tax when the Contractor requests such evidence and a reasonable basis exists to sustain the exemption.

59      52.229-5      TAXES-- CONTRACTS PERFORMED IN U. S. POSSESSIONS OR  
PUERTO RICO (APR 1984)

(End of clause)

(AV 1-11.401-3(a))

When the allowability of costs under this contract is determined in accordance with Part 31 of the Federal Acquisition Regulation (FAR), allowability shall also be determined in accordance with Part 231 of the Defense FAR Supplement, in effect on the date of this contract.

(End of clause)

61 52. 232- 5 PAYMENTS UNDER FIXED-PRICE CONSTRUCTION CONTRACTS  
(MAY 1997)

(a) Payment of price. The Government shall pay the Contractor the contract price as provided in this contract.

(b) Progress payments. The Government shall make progress payments monthly as the work proceeds, or at more frequent intervals as determined by the Contracting Officer, on estimates of work accomplished which meets the standards of quality established under the contract, as approved by the Contracting Officer.

(1) The Contractor's request for progress payments shall include the following substantiation:

(i) An itemization of the amounts requested, related to the various elements of work required by the contract covered by the payment requested.

(ii) A listing of the amount included for work performed by each subcontractor under the contract.

(iii) A listing of the total amount of each subcontract under the contract.

(iv) A listing of the amounts previously paid to each such subcontractor under the contract.

(v) Additional supporting data in a form and detail required by the Contracting Officer.

(2) In the preparation of estimates, the Contracting Officer may authorize material delivered on the site and preparatory work done to be taken into consideration. Material delivered to the Contractor at locations other than the site also may be taken into consideration if--

(i) Consideration is specifically authorized by this contract; and

(ii) The Contractor furnishes satisfactory evidence that it has acquired title to such material and that the material will be used to perform this contract.

(c) Contractor certification. Along with each request for progress payments, the Contractor shall furnish the following certification, or payment shall not be made: (However, if the Contractor elects to delete paragraph (c)(4) from the certification, the certification is still acceptable.)

I hereby certify, to the best of my knowledge and belief, that--

(1) The amounts requested are only for performance in accordance with the specifications, terms, and conditions of the contract;

(2) Payments to subcontractors and suppliers have been made from previous payments received under the contract, and timely payments will be made from the proceeds of the payment covered by this certification, in accordance with subcontract agreements and the requirements of chapter 39 of Title 31, United States Code;

(3) This request for progress payments does not include any amounts which the prime contractor intends to withhold or retain from a subcontractor or supplier in accordance with the terms and conditions of the subcontract; and

(4) This certification is not to be construed as final acceptance of a subcontractor's performance.

\_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Date)

(d) Refund of unearned amounts. If the Contractor, after making a certified request for progress payments, discovers that a portion or all of such request constitutes a payment for performance by the Contractor that fails to conform to the specifications, terms, and conditions of this contract (hereinafter referred to as the "unearned amount"), the Contractor shall--

(1) Notify the Contracting Officer of such performance deficiency; and

(2) Be obligated to pay the Government an amount (computed by the Contracting Officer in the manner provided in paragraph (j) of this clause) equal to interest on the unearned amount from the 8th day after the date of receipt of the unearned amount until--

(i) The date the Contractor notifies the Contracting Officer that the performance deficiency has been corrected; or

(ii) The date the Contractor reduces the amount of any subsequent certified request for progress payments by an amount equal to the unearned amount.

(e) Retainage. If the Contracting Officer finds that satisfactory progress was achieved during any period for which a progress payment is to be made, the Contracting Officer shall authorize payment to be made in full. However, if satisfactory progress has not been made, the Contracting Officer may retain a maximum of 10 percent of the amount of the payment until satisfactory progress is achieved. When the work is substantially complete, the Contracting Officer may retain from previously withheld funds and future progress payments that amount the Contracting Officer considers adequate for protection of the Government and shall release to the Contractor all the remaining withheld funds. Also, on completion and acceptance of each separate building, public work, or other division of the contract, for which the price is stated separately in the contract, payment shall be made for the completed work without retention of a percentage.

(f) Title, liability, and reservation of rights. All material and work covered by progress payments made shall, at the time of payment, become the sole property of the Government, but this shall not be construed as--

(1) Relieving the Contractor from the sole responsibility for all material and work upon which payments have been made or the restoration of any damaged work; or

(2) Waiving the right of the Government to require the fulfillment of all of the terms of the contract.

(g) Reimbursement for bond premiums. In making these progress payments, the Government shall, upon request, reimburse the Contractor for the amount of premiums paid for performance and payment bonds (including coinsurance and reinsurance agreements, when applicable) after the Contractor has furnished evidence of full payment to the surety. The retainage provisions in paragraph (e) of this clause shall not apply to that portion of progress payments attributable to bond premiums.

(h) Final payment. The Government shall pay the amount due the Contractor under this contract after--

(1) Completion and acceptance of all work;

(2) Presentation of a properly executed voucher; and

(3) Presentation of release of all claims against the Government

arising by virtue of this contract, other than claims, in stated amounts, that the Contractor has specifically excepted from the operation of the release. A release may also be required of the assignee if the Contractor's claim to amounts payable under this contract has been assigned under the Assignment of Claims Act of 1940 (31 U.S.C. 3727 and 41 U.S.C. 15).

(i) Limitation because of undefinitized work. Notwithstanding any provision of this contract, progress payments shall not exceed 80 percent on work accomplished on undefinitized contract actions. A "contract action" is any action resulting in a contract, as defined in FAR Subpart 2.1, including contract modifications for additional supplies or services, but not including contract modifications that are within the scope and under the terms of the contract, such as contract modifications issued pursuant to the Changes clause, or funding and other administrative changes.

(j) Interest computation on unearned amounts. In accordance with 31 U.S.C. 3903(c)(1), the amount payable under subparagraph (d)(2) of this clause shall be--

(1) Computed at the rate of average bond equivalent rates of 91-day Treasury bills auctioned at the most recent auction of such bills prior to the date the Contractor receives the unearned amount; and

(2) Deducted from the next available payment to the Contractor.

(End of clause)

62      52.232-17      INTEREST (JUN 1996)

(a) Except as otherwise provided in this contract under a Price Reduction for Defective Cost or Pricing Data clause or a Cost Accounting Standards clause, all amounts that become payable by the Contractor to the Government under this contract (net of any applicable tax credit under the Internal Revenue Code (26 U.S.C. 1481)) shall bear simple interest from the date due until paid unless paid within 30 days of becoming due. The interest rate shall be the interest rate established by the Secretary of the Treasury as provided in Section 12 of the Contract Disputes Act of 1978 (Public Law 95-563), which is applicable to the period in which the amount becomes due, as provided in paragraph (b) of this clause, and then at the rate applicable for each six-month period as fixed by the Secretary until the amount is paid.

(b) Amounts shall be due at the earliest of the following dates:

(1) The date fixed under this contract.

(2) The date of the first written demand for payment consistent with this contract, including any demand resulting from a default termination.

(3) The date the Government transmits to the Contractor a proposed supplemental agreement to confirm completed negotiations establishing the amount of debt.

(4) If this contract provides for revision of prices, the date of written notice to the Contractor stating the amount of refund payable in connection with a pricing proposal or a negotiated pricing agreement not confirmed by contract modification.

(c) The interest charge made under this clause may be reduced under the procedures prescribed in 32.614-2 of the Federal Acquisition Regulation in effect on the date of this contract.

(End of clause)

(a) The Contractor, under the Assignment of Claims Act, as amended, 31 U.S.C. 3727, 41 U.S.C. 15 (hereafter referred to as "the Act"), may assign its rights to be paid amounts due or to become due as a result of the performance of this contract to a bank, trust company, or other financing institution, including any Federal lending agency. The assignee under such an assignment may thereafter further assign or reassign its right under the original assignment to any type of financing institution described in the preceding sentence.

(b) Any assignment or reassignment authorized under the Act and this clause shall cover all unpaid amounts payable under this contract, and shall not be made to more than one party, except that an assignment or reassignment may be made to one party as agent or trustee for two or more parties participating in the financing of this contract.

(c) The Contractor shall not furnish or disclose to any assignee under this contract any classified document (including this contract) or information related to work under this contract until the Contracting Officer authorizes such action in writing.

(End of clause)

Notwithstanding any other payment terms in this contract, the Government will make invoice payments and contract financing payments under the terms and conditions specified in this clause. Payment shall be considered as being made on the day a check is dated or the date of an electronic funds transfer. Definitions of pertinent terms are set forth in section 32.902 of the Federal Acquisition Regulation. All days referred to in this clause are calendar days, unless otherwise specified. (However, see subparagraph (a)(3) concerning payments due on Saturdays, Sundays, and legal holidays.)

(a) Invoice payments--

(1) Types of invoice payments. For purposes of this clause, there are several types of invoice payments that may occur under this contract, as follows:

(i) Progress payments, if provided for elsewhere in this contract, based on Contracting Officer approval of the estimated amount and value of work or services performed, including payments for reaching milestones in any project:

(A) The due date for making such payments shall be 14 days after receipt of the payment request by the designated billing office. If the designated billing office fails to annotate the payment request with the actual date of receipt at the time of receipt, the payment due date shall be the 14th day after the date of the Contractor's payment request, provided a proper payment request is received and there is no disagreement over quantity, quality, or Contractor compliance with contract requirements.

(B) The due date for payment of any amounts retained by the Contracting Officer in accordance with the clause at 52.232-5, Payments Under Fixed-Price Construction Contracts, shall be as specified in the contract or, if not specified, 30 days after approval for release to the Contractor by the Contracting Officer.

(ii) Final payments based on completion and acceptance of all work and presentation of release of all claims against the Government arising by virtue of the contract, and payments for partial deliveries that have been accepted by the Government (e.g., each separate

building, public work, or other division of the contract for which the price is stated separately in the contract):

(A) The due date for making such payments shall be either the 30th day after receipt by the designated billing office of a proper invoice from the Contractor, or the 30th day after Government acceptance of the work or services completed by the Contractor, whichever is later. If the designated billing office fails to annotate the invoice with the date of actual receipt at the time of receipt, the invoice payment due date shall be the 30th day after the date of the Contractor's invoice, provided a proper invoice is received and there is no disagreement over quantity, quality, or Contractor compliance with contract requirements.

(B) On a final invoice where the payment amount is subject to contract settlement actions (e.g., release of claims), acceptance shall be deemed to have occurred on the effective date of the contract settlement.

(2) Contractor's invoice. The Contractor shall prepare and submit invoices to the designated billing office specified in the contract. A proper invoice must include the items listed in paragraphs (a)(2)(i) through (a)(2)(ix) of this clause. If the invoice does not comply with these requirements, it shall be returned within 7 days after the date the designated billing office received the invoice, with a statement of the reasons why it is not a proper invoice. Untimely notification will be taken into account in computing any interest penalty owed the Contractor in the manner described in subparagraph (a)(4) of this clause.

(i) Name and address of the Contractor.

(ii) Invoice date. (The Contractor is encouraged to date invoices as close as possible to the date of mailing or transmission.)

(iii) Contract number or other authorization for work or services performed (including order number and contract line item number).

(iv) Description of work or services performed.

(v) Delivery and payment terms (e.g., prompt payment discount terms).

(vi) Name and address of Contractor official to whom payment is to be sent (must be the same as that in the contract or in a proper notice of assignment).

(vii) Name (where practicable), title, phone number, and mailing address of person to be notified in the event of a defective invoice.

(viii) For payments described in paragraph (a)(1)(i) of this clause, substantiation of the amounts requested and certification in accordance with the requirements of the clause at 52.232-5, Payments Under Fixed-Price Construction Contracts.

(ix) Any other information or documentation required by the contract.

(x) While not required, the Contractor is strongly encouraged to assign an identification number to each invoice.

(3) Interest penalty. An interest penalty shall be paid automatically by the designated payment office, without request from the Contractor, if payment is not made by the due date and the conditions listed in paragraphs (a)(3)(i) through (a)(3)(iii) of this clause are met, if applicable. However, when the due date falls on a Saturday, Sunday, or legal holiday when Federal Government offices are closed and Government business is not expected to be conducted, payment may be made on the following business day without incurring a late payment interest penalty.

(i) A proper invoice was received by the designated billing office.

(ii) A receiving report or other Government documentation authorizing payment was processed and there was no disagreement over quantity, quality, Contractor compliance with any contract term or condition, or requested progress payment amount.



(iii) In the case of a final invoice for any balance of funds due the Contractor for work or services performed, the amount was not subject to further contract settlement actions between the Government and the Contractor.

(4) Computing penalty amount. The interest penalty shall be at the rate established by the Secretary of the Treasury under section 12 of the Contract Disputes Act of 1978 (41 U.S.C. 611) that is in effect on the day after the due date, except where the interest penalty is prescribed by other governmental authority (e.g., tariffs). This rate is referred to as the "Renegotiation Board Interest Rate," and it is published in the Federal Register semiannually on or about January 1 and July 1. The interest penalty shall accrue daily on the invoice principal payment amount approved by the Government until the payment date of such approved principal amount; and will be compounded in 30-day increments inclusive from the first day after the due date through the payment date. That is, interest accrued at the end of any 30-day period will be added to the approved invoice principal payment amount and will be subject to interest penalties if not paid in the succeeding 30-day period. If the designated billing office failed to notify the Contractor of a defective invoice within the periods prescribed in subparagraph (a)(2) of this clause, the due date on the corrected invoice will be adjusted by subtracting from such date the number of days taken beyond the prescribed notification of defects period. Any interest penalty owed the Contractor will be based on this adjusted due date. Adjustments will be made by the designated payment office for errors in calculating interest penalties.

(i) For the sole purpose of computing an interest penalty that might be due the Contractor for payments described in paragraph (a)(1)(ii) of this clause, Government acceptance or approval shall be deemed to have occurred constructively on the 7th day after the Contractor has completed the work or services in accordance with the terms and conditions of the contract. In the event that actual acceptance or approval occurs within the constructive acceptance or approval period, the determination of an interest penalty shall be based on the actual date of acceptance or approval. Constructive acceptance or constructive approval requirements do not apply if there is a disagreement over quantity, quality, or Contractor compliance with a contract provision. These requirements also do not compel Government officials to accept work or services, approve Contractor estimates, perform contract administration functions, or make payment prior to fulfilling their responsibilities.

(ii) The following periods of time will not be included in the determination of an interest penalty:

(A) The period taken to notify the Contractor of defects in invoices submitted to the Government, but this may not exceed 7 days.

(B) The period between the defects notice and resubmission of the corrected invoice by the Contractor.

(C) For incorrect electronic funds transfer (EFT) information, in accordance with the EFT clause of this contract.

(iii) Interest penalties will not continue to accrue after the filing of a claim for such penalties under the clause at 52.233-1, Disputes, or for more than 1 year. Interest penalties of less than \$1 need not be paid.

(iv) Interest penalties are not required on payment delays due to disagreement between the Government and the Contractor over the payment amount or other issues involving contract compliance, or on amounts temporarily withheld or retained in accordance with the terms of the contract. Claims involving disputes, and any interest that may be

payable, will be resolved in accordance with the clause at 52.233-1, Disputes.

(5) Prompt payment discounts. An interest penalty also shall be paid automatically by the designated payment office, without request from the Contractor, if a discount for prompt payment is taken improperly. The interest penalty will be calculated on the amount of discount taken for the period beginning with the first day after the end of the discount period through the date when the Contractor is paid.

(6) Additional interest penalty.

(i) A penalty amount, calculated in accordance with subdivision (a)(6)(iii) of this clause, shall be paid in addition to the interest penalty amount if the Contractor--

(A) Is owed an interest penalty of \$1 or more;

(B) Is not paid the interest penalty within 10 days after the date the invoice amount is paid; and

(C) Makes a written demand to the designated payment office for additional penalty payment, in accordance with subdivision (a)(6)(ii) of this clause, postmarked not later than 40 days after the date the invoice amount is paid.

(ii)(A) Contractors shall support written demands for additional penalty payments with the following data. No additional data shall be required. Contractors shall--

(1) Specifically assert that late payment interest is due under a specific invoice, and request payment of all overdue late payment interest penalty and such additional penalty as may be required;

(2) Attach a copy of the invoice on which the unpaid late payment interest was due; and

(3) State that payment of the principal has been received, including the date of receipt.

(B) Demands must be postmarked on or before the 40th day after payment was made, except that--

(1) If the postmark is illegible or nonexistent, the demand must have been received and annotated with the date of receipt by the designated payment office on or before the 40th day after payment was made; or

(2) If the postmark is illegible or nonexistent and the designated payment office fails to make the required annotation, the demand's validity will be determined by the date the Contractor has placed on the demand; provided such date is no later than the 40th day after payment was made.

(iii)(A) The additional penalty shall be equal to 100 percent of any original late payment interest penalty, except--

(1) The additional penalty shall not exceed \$5,000;

(2) The additional penalty shall never be less than \$25; and

(3) No additional penalty is owed if the amount of the underlying interest penalty is less than \$1.

(B) If the interest penalty ceases to accrue in accordance with the limits stated in subdivision (a)(4)(iii) of this clause, the amount of the additional penalty shall be calculated on the amount of interest penalty that would have accrued in the absence of these limits, subject to the overall limits on the additional penalty specified in subdivision (a)(6)(iii)(A) of this clause.

(C) For determining the maximum and minimum additional penalties, the test shall be the interest penalty due on each separate payment made for each separate contract. The maximum and minimum additional penalty shall not be based upon individual invoices unless the invoices are paid separately. Where payments are consolidated for

disbursing purposes, the maximum and minimum additional penalty determination shall be made separately for each contract therein.

(D) The additional penalty does not apply to payments regulated by other Government regulations (e.g., payments under utility contracts subject to tariffs and regulation).

(b) Contract financing payments--

(1) Due dates for recurring financing payments. If this contract provides for contract financing, requests for payment shall be submitted to the designated billing office as specified in this contract or as directed by the Contracting Officer. Contract financing payments shall be made on the 30th day after receipt of a proper contract financing request by the designated billing office. In the event that an audit or other review of a specific financing request is required to ensure compliance with the terms and conditions of the contract, the designated payment office is not compelled to make payment by the due date specified.

(2) Due dates for other contract financing. For advance payments, loans, or other arrangements that do not involve recurring submissions of contract financing requests, payment shall be made in accordance with the corresponding contract terms or as directed by the Contracting Officer.

(3) Interest penalty not applicable. Contract financing payments shall not be assessed an interest penalty for payment delays.

(c) Subcontract clause requirements. The Contractor shall include in each subcontract for property or services (including a material supplier) for the purpose of performing this contract the following:

(1) Prompt payment for subcontractors. A payment clause that obligates the Contractor to pay the subcontractor for satisfactory performance under its subcontract not later than 7 days from receipt of payment out of such amounts as are paid to the Contractor under this contract.

(2) Interest for subcontractors. An interest penalty clause that obligates the Contractor to pay to the subcontractor an interest penalty for each payment not made in accordance with the payment clause--

(i) For the period beginning on the day after the required payment date and ending on the date on which payment of the amount due is made; and

(ii) Computed at the rate of interest established by the Secretary of the Treasury, and published in the Federal Register, for interest payments under section 12 of the Contract Disputes Act of 1978 (41 U.S.C. 611) in effect at the time the Contractor accrues the obligation to pay an interest penalty.

(3) Subcontractor clause flowdown. A clause requiring each subcontractor to include a payment clause and an interest penalty clause conforming to the standards set forth in subparagraphs (c)(1) and (c)(2) of this clause in each of its subcontracts, and to require each of its subcontractors to include such clauses in their subcontracts with each lower-tier subcontractor or supplier.

(d) Subcontract clause interpretation. The clauses required by paragraph (c) of this clause shall not be construed to impair the right of the Contractor or a subcontractor at any tier to negotiate, and to include in their subcontract, provisions that--

(1) Retainage permitted. Permit the Contractor or a subcontractor to retain (without cause) a specified percentage of each progress payment otherwise due to a subcontractor for satisfactory performance under the subcontract without incurring any obligation to pay a late payment interest penalty, in accordance with terms and conditions agreed to by the parties to the subcontract, giving such recognition as the parties deem appropriate to the ability of a subcontractor to furnish a

performance bond and a payment bond;

(2) Withholding permitted. Permit the Contractor or subcontractor to make a determination that part or all of the subcontractor's request for payment may be withheld in accordance with the subcontract agreement; and

(3) Withholding requirements. Permit such withholding without incurring any obligation to pay a late payment penalty if--

(i) A notice conforming to the standards of paragraph (g) of this clause previously has been furnished to the subcontractor; and

(ii) A copy of any notice issued by a Contractor pursuant to subdivision (d)(3)(i) of this clause has been furnished to the Contracting Officer.

(e) Subcontractor withholding procedures. If a Contractor, after making a request for payment to the Government but before making a payment to a subcontractor for the subcontractor's performance covered by the payment request, discovers that all or a portion of the payment otherwise due such subcontractor is subject to withholding from the subcontractor in accordance with the subcontract agreement, then the Contractor shall--

(1) Subcontractor notice. Furnish to the subcontractor a notice conforming to the standards of paragraph (g) of this clause as soon as practicable upon ascertaining the cause giving rise to a withholding, but prior to the due date for subcontractor payment;

(2) Contracting Officer notice. Furnish to the Contracting Officer, as soon as practicable, a copy of the notice furnished to the subcontractor pursuant to subparagraph (e)(1) of this clause;

(3) Subcontractor progress payment reduction. Reduce the subcontractor's progress payment by an amount not to exceed the amount specified in the notice of withholding furnished under subparagraph (e)(1) of this clause;

(4) Subsequent subcontractor payment. Pay the subcontractor as soon as practicable after the correction of the identified subcontract performance deficiency, and--

(i) Make such payment within--

(A) Seven days after correction of the identified subcontract performance deficiency (unless the funds therefor must be recovered from the Government because of a reduction under paragraph (e)(5)(i) of this clause; or

(B) Seven days after the Contractor recovers such funds from the Government; or

(ii) Incur an obligation to pay a late payment interest penalty computed at the rate of interest established by the Secretary of the Treasury, and published in the Federal Register, for interest payments under section 12 of the Contracts Disputes Act of 1978 (41 U.S.C. 611) in effect at the time the Contractor accrues the obligation to pay an interest penalty;

(5) Notice to Contracting Officer. Notify the Contracting Officer upon--

(i) Reduction of the amount of any subsequent certified application for payment; or

(ii) Payment to the subcontractor of any withheld amounts of a progress payment, specifying--

(A) The amounts withheld under subparagraph (e)(1) of this clause; and

(B) The dates that such withholding began and ended; and

(6) Interest to Government. Be obligated to pay to the Government an amount equal to interest on the withheld payments (computed in the manner provided in 31 U.S.C. 3903(c)(1)), from the 8th day after receipt of the withheld amounts from the Government until--

(i) The day the identified subcontractor performance deficiency is corrected; or

(ii) The date that any subsequent payment is reduced under subdivision (e)(5)(i) of this clause.

(f) Third-party deficiency reports--

(1) Withholding from subcontractor. If a Contractor, after making payment to a first-tier subcontractor, receives from a supplier or subcontractor of the first-tier subcontractor (hereafter referred to as a "second-tier subcontractor") a written notice in accordance with section 2 of the Act of August 24, 1935 (40 U.S.C. 270b, Miller Act), asserting a deficiency in such first-tier subcontractor's performance under the contract for which the Contractor may be ultimately liable, and the Contractor determines that all or a portion of future payments otherwise due such first-tier subcontractor is subject to withholding in accordance with the subcontract agreement, the Contractor may, without incurring an obligation to pay an interest penalty under subparagraph (e)(6) of this clause--

(i) Furnish to the first-tier subcontractor a notice conforming to the standards of paragraph (g) of this clause as soon as practicable upon making such determination; and

(ii) Withhold from the first-tier subcontractor's next available progress payment or payments an amount not to exceed the amount specified in the notice of withholding furnished under paragraph (f)(1)(i) of this clause.

(2) Subsequent payment or interest charge. As soon as practicable, but not later than 7 days after receipt of satisfactory written notification that the identified subcontract performance deficiency has been corrected, the Contractor shall--

(i) Pay the amount withheld under paragraph (f)(1)(ii) of this clause to such first-tier subcontractor; or

(ii) Incur an obligation to pay a late payment interest penalty to such first-tier subcontractor computed at the rate of interest established by the Secretary of the Treasury, and published in the Federal Register, for interest payments under section 12 of the Contracts Disputes Act of 1978 (41 U.S.C. 611) in effect at the time the Contractor accrues the obligation to pay an interest penalty.

(g) Written notice of subcontractor withholding. A written notice of any withholding shall be issued to a subcontractor (with a copy to the Contracting Officer of any such notice issued by the Contractor), specifying--

(1) The amount to be withheld;

(2) The specific causes for the withholding under the terms of the subcontract; and

(3) The remedial actions to be taken by the subcontractor in order to receive payment of the amounts withheld.

(h) Subcontractor payment entitlement. The Contractor may not request payment from the Government of any amount withheld or retained in accordance with paragraph (d) of this clause until such time as the Contractor has determined and certified to the Contracting Officer that the subcontractor is entitled to the payment of such amount.

(i) Prime-subcontractor disputes. A dispute between the Contractor and subcontractor relating to the amount or entitlement of a subcontractor to a payment or a late payment interest penalty under a clause included in the subcontract pursuant to paragraph (c) of this clause does not constitute a dispute to which the United States is a party. The United States may not be interpleaded in any judicial or administrative proceeding involving such a dispute.

(j) Preservation of prime-subcontractor rights. Except as provided in paragraph (i) of this clause, this clause shall not limit or impair any contractual, administrative, or judicial remedies otherwise available to the Contractor or a subcontractor in the event of a dispute involving late payment or nonpayment by the Contractor or deficient subcontract performance or nonperformance by a subcontractor.

(k) Non-recourse for prime contractor interest penalty. The Contractor's obligation to pay an interest penalty to a subcontractor pursuant to the clauses included in a subcontract under paragraph (c) of this clause shall not be construed to be an obligation of the United States for such interest penalty. A cost-reimbursement claim may not include any amount for reimbursement of such interest penalty.

(End of clause)

65      52. 232- 33      PAYMENT BY ELECTRONIC FUNDS TRANSFER--CENTRAL CONTRACTOR  
REGISTRATION (MAY 1999)

(a) Method of payment. (1) All payments by the Government under this contract shall be made by electronic funds transfer (EFT), except as provided in paragraph (a)(2) of this clause. As used in this clause, the term "EFT" refers to the funds transfer and may also include the payment information transfer.

(2) In the event the Government is unable to release one or more payments by EFT, the Contractor agrees to either--

(i) Accept payment by check or some other mutually agreeable method of payment; or

(ii) Request the Government to extend the payment due date until such time as the Government can make payment by EFT (but see paragraph (d) of this clause).

(b) Contractor's EFT information. The Government shall make payment to the Contractor using the EFT information contained in the Central Contractor Registration (CCR) database. In the event that the EFT information changes, the Contractor shall be responsible for providing the updated information to the CCR database.

(c) Mechanisms for EFT payment. The Government may make payment by EFT through either the Automated Clearing House (ACH) network, subject to the rules of the National Automated Clearing House Association, or the Fedwire Transfer System. The rules governing Federal payments through the ACH are contained in 31 CFR part 210.

(d) Suspension of payment. If the Contractor's EFT information in the CCR database is incorrect, then the Government need not make payment to the Contractor under this contract until correct EFT information is entered into the CCR database; and any invoice or contract financing request shall be deemed not to be a proper invoice for the purpose of prompt payment under this contract. The prompt payment terms of the contract regarding notice of an improper invoice and delays in accrual of interest penalties apply.

(e) Contractor EFT arrangements. If the Contractor has identified multiple payment receiving points (i.e., more than one remittance address and/or EFT information set) in the CCR database, and the Contractor has not notified the Government of the payment receiving point applicable to this contract, the Government shall make payment to the first payment receiving point (EFT information set or remittance address as applicable) listed in the CCR database.

(f) Liability for uncompleted or erroneous transfers. (1) If an uncompleted or erroneous transfer occurs because the Government used

the Contractor's EFT information incorrectly, the Government remains responsible for--

- (i) Making a correct payment;
- (ii) Paying any prompt payment penalty due; and
- (iii) Recovering any erroneously directed funds.

(2) If an uncompleted or erroneous transfer occurs because the Contractor's EFT information was incorrect, or was revised within 30 days of Government release of the EFT payment transaction instruction to the Federal Reserve System, and--

(i) If the funds are no longer under the control of the payment office, the Government is deemed to have made payment and the Contractor is responsible for recovery of any erroneously directed funds; or

(ii) If the funds remain under the control of the payment office, the Government shall not make payment, and the provisions of paragraph (d) of this clause shall apply.

(g) EFT and prompt payment. A payment shall be deemed to have been made in a timely manner in accordance with the prompt payment terms of this contract if, in the EFT payment transaction instruction released to the Federal Reserve System, the date specified for settlement of the payment is on or before the prompt payment due date, provided the specified payment date is a valid date under the rules of the Federal Reserve System.

(h) EFT and assignment of claims. If the Contractor assigns the proceeds of this contract as provided for in the assignment of claims terms of this contract, the Contractor shall require as a condition of any such assignment, that the assignee shall register in the CCR database and shall be paid by EFT in accordance with the terms of this clause. In all respects, the requirements of this clause shall apply to the assignee as if it were the Contractor. EFT information that shows the ultimate recipient of the transfer to be other than the Contractor, in the absence of a proper assignment of claims acceptable to the Government, is incorrect EFT information within the meaning of paragraph (d) of this clause.

(i) Liability for change of EFT information by financial agent. The Government is not liable for errors resulting from changes to EFT information made by the Contractor's financial agent.

(j) Payment information. The payment or disbursing office shall forward to the Contractor available payment information that is suitable for transmission as of the date of release of the EFT instruction to the Federal Reserve System. The Government may request the Contractor to designate a desired format and method(s) for delivery of payment information from a list of formats and methods the payment office is capable of executing. However, the Government does not guarantee that any particular format or method of delivery is available at any particular payment office and retains the latitude to use the format and delivery method most convenient to the Government. If the Government makes payment by check in accordance with paragraph (a) of this clause, the Government shall mail the payment information to the remittance address contained in the CCR database.

(End of Clause)

(a) This contract is subject to the Contract Disputes Act of 1978, as amended (41 U.S.C. 601-613).

(b) Except as provided in the Act, all disputes arising under or relating to this contract shall be resolved under this clause.

(c) "Claim," as used in this clause, means a written demand or written assertion by one of the contracting parties seeking, as a matter of right, the payment of money in a sum certain, the adjustment or interpretation of contract terms, or other relief arising under or relating to this contract. A claim arising under a contract, unlike a claim relating to that contract, is a claim that can be resolved under a contract clause that provides for the relief sought by the claimant. However, a written demand or written assertion by the Contractor seeking the payment of money exceeding \$100,000 is not a claim under the Act until certified as required by subparagraph (d)(2) of this clause. A voucher, invoice, or other routine request for payment that is not in dispute when submitted is not a claim under the Act. The submission may be converted to a claim under the Act, by complying with the submission and certification requirements of this clause, if it is disputed either as to liability or amount or is not acted upon in a reasonable time.

(d)(1) A claim by the Contractor shall be made in writing and, unless otherwise stated in this contract, submitted within 6 years after accrual of the claim to the Contracting Officer for a written decision. A claim by the Government against the Contractor shall be subject to a written decision by the Contracting Officer.

(2)(i) The Contractor shall provide the certification specified in paragraph (d)(2)(iii) of this clause when submitting any claim exceeding \$100,000.

(ii) The certification requirement does not apply to issues in controversy that have not been submitted as all or part of a claim.

(iii) The certification shall state as follows:

"I certify that the claim is made in good faith; that the supporting data are accurate and complete to the best of my knowledge and belief; that the amount requested accurately reflects the contract adjustment for which the Contractor believes the Government is liable; and that I am duly authorized to certify the claim on behalf of the Contractor."

(3) The certification may be executed by any person duly authorized to bind the Contractor with respect to the claim.

(e) For Contractor claims of \$100,000 or less, the Contracting Officer must, if requested in writing by the Contractor, render a decision within 60 days of the request. For Contractor-certified claims over \$100,000, the Contracting Officer must, within 60 days, decide the claim or notify the Contractor of the date by which the decision will be made.

(f) The Contracting Officer's decision shall be final unless the Contractor appeals or files a suit as provided in the Act.

(g) If the claim by the Contractor is submitted to the Contracting Officer or a claim by the Government is presented to the Contractor, the parties, by mutual consent, may agree to use alternative dispute resolution (ADR). If the Contractor refuses an offer for ADR, the Contractor shall inform the Contracting Officer, in writing, of the Contractor's specific reasons for rejecting the offer.

(h) The Government shall pay interest on the amount found due and unpaid from (1) the date that the Contracting Officer receives the claim (certified, if required); or (2) the date that payment otherwise would be due, if that date is later, until the date of payment. With regard to claims having defective certifications, as defined in (FAR) 48 CFR 33.201,



interest shall be paid from the date that the Contracting Officer initially receives the claim. Simple interest on claims shall be paid at the rate, fixed by the Secretary of the Treasury as provided in the Act, which is applicable to the period during which the Contracting Officer receives the claim and then at the rate applicable for each 6-month period as fixed by the Treasury Secretary during the pendency of the claim.

(i) The Contractor shall proceed diligently with performance of this contract, pending final resolution of any request for relief, claim, appeal, or action arising under the contract, and comply with any decision of the Contracting Officer.

(End of clause)

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52. 233- 3

PROTEST AFTER AWARD (AUG 1996)

(a) Upon receipt of a notice of protest (as defined in FAR 33.101) or a determination that a protest is likely (see FAR 33.102(d)), the Contracting Officer may, by written order to the Contractor, direct the Contractor to stop performance of the work called for by this contract. The order shall be specifically identified as a stop-work order issued under this clause. Upon receipt of the order, the Contractor shall immediately comply with its terms and take all reasonable steps to minimize the incurrence of costs allocable to the work covered by the order during the period of work stoppage. Upon receipt of the final decision in the protest, the Contracting Officer shall either--

(1) Cancel the stop-work order; or

(2) Terminate the work covered by the order as provided in the Default, or the Termination for Convenience of the Government, clause of this contract.

(b) If a stop-work order issued under this clause is canceled either before or after a final decision in the protest, the Contractor shall resume work. The Contracting Officer shall make an equitable adjustment in the delivery schedule or contract price, or both, and the contract shall be modified, in writing, accordingly, if--

(1) The stop-work order results in an increase in the time required for, or in the Contractor's cost properly allocable to, the performance of any part of this contract; and

(2) The Contractor asserts its right to an adjustment within 30 days after the end of the period of work stoppage; provided, that if the Contracting Officer decides the facts justify the action, the Contracting Officer may receive and act upon a proposal at any time before final payment under this contract.

(c) If a stop-work order is not canceled and the work covered by the order is terminated for the convenience of the Government, the Contracting Officer shall allow reasonable costs resulting from the stop-work order in arriving at the termination settlement.

(d) If a stop-work order is not canceled and the work covered by the order is terminated for default, the Contracting Officer shall allow, by equitable adjustment or otherwise, reasonable costs resulting from the stop-work order.

(e) The Government's rights to terminate this contract at any time are not affected by action taken under this clause.

(f) If, as the result of the Contractor's intentional or negligent misstatement, misrepresentation, or miscertification, a protest related to this contract is sustained, and the Government pays costs, as provided in FAR 33.102(b)(2) or 33.104(h)(1), the Government may require the Contractor to reimburse the Government the amount of such costs. In addition to any

other remedy available, and pursuant to the requirements of Subpart 32.6, the Government may collect this debt by offsetting the amount against any payment due the Contractor under any contract between the Contractor and the Government.

(End of clause)

68      52.236-2      DIFFERING SITE CONDITIONS (APR 1984)

(a) The Contractor shall promptly, and before the conditions are disturbed, give a written notice to the Contracting Officer of (1) subsurface or latent physical conditions at the site which differ materially from those indicated in this contract, or (2) unknown physical conditions at the site, of an unusual nature, which differ materially from those ordinarily encountered and generally recognized as inhering in work of the character provided for in the contract.

(b) The Contracting Officer shall investigate the site conditions promptly after receiving the notice. If the conditions do materially so differ and cause an increase or decrease in the Contractor's cost of, or the time required for, performing any part of the work under this contract, whether or not changed as a result of the conditions, an equitable adjustment shall be made under this clause and the contract modified in writing accordingly.

(c) No request by the Contractor for an equitable adjustment to the contract under this clause shall be allowed, unless the Contractor has given the written notice required; provided, that the time prescribed in (a) above for giving written notice may be extended by the Contracting Officer.

(d) No request by the Contractor for an equitable adjustment to the contract for differing site conditions shall be allowed if made after final payment under this contract.

(End of clause)

69      52.236-3      SITE INVESTIGATION AND CONDITIONS AFFECTING THE WORK  
(APR 1984)

(a) The Contractor acknowledges that it has taken steps reasonably necessary to ascertain the nature and location of the work, and that it has investigated and satisfied itself as to the general and local conditions which can affect the work or its cost, including but not limited to (1) conditions bearing upon transportation, disposal, handling, and storage of materials; (2) the availability of labor, water, electric power, and roads; (3) uncertainties of weather, river stages, tides, or similar physical conditions at the site; (4) the conformation and conditions of the ground; and (5) the character of equipment and facilities needed preliminary to and during work performance. The Contractor also acknowledges that it has satisfied itself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including all exploratory work done by the Government, as well as from the drawings and specifications made a part of this contract. Any failure of the Contractor to take the actions described and acknowledged in this paragraph will not relieve the Contractor from responsibility for estimating properly the difficulty and cost of successfully performing the work, or for proceeding to successfully perform the work without

additional expense to the Government.

(b) The Government assumes no responsibility for any conclusions or interpretations made by the Contractor based on the information made available by the Government. Nor does the Government assume responsibility for any understanding reached or representation made concerning conditions which can affect the work by any of its officers or agents before the execution of this contract, unless that understanding or representation is expressly stated in this contract.

(End of clause)

70      52. 236- 5              MATERIAL AND WORKMANSHIP (APR 1984)

(a) All equipment, material, and articles incorporated into the work covered by this contract shall be new and of the most suitable grade for the purpose intended, unless otherwise specifically provided in this contract. References in the specifications to equipment, material, articles, or patented processes by trade name, make, or catalog number, shall be regarded as establishing a standard of quality and shall not be construed as limiting competition. The Contractor may, at its option, use any equipment, material, article, or process that, in the judgment of the Contracting Officer, is equal to that named in the specifications, unless otherwise specifically provided in this contract.

(b) The Contractor shall obtain the Contracting Officer's approval of the machinery and mechanical and other equipment to be incorporated into the work. When requesting approval, the Contractor shall furnish to the Contracting Officer the name of the manufacturer, the model number, and other information concerning the performance, capacity, nature, and rating of the machinery and mechanical and other equipment. When required by this contract or by the Contracting Officer, the Contractor shall also obtain the Contracting Officer's approval of the material or articles which the Contractor contemplates incorporating into the work. When requesting approval, the Contractor shall provide full information concerning the material or articles. When directed to do so, the Contractor shall submit samples for approval at the Contractor's expense, with all shipping charges prepaid. Machinery, equipment, material, and articles that do not have the required approval shall be installed or used at the risk of subsequent rejection.

(c) All work under this contract shall be performed in a skillful and workmanlike manner. The Contracting Officer may require, in writing, that the Contractor remove from the work any employee the Contracting Officer deems incompetent, careless, or otherwise objectionable.

(End of clause)

(R 7- 602. 9 1964 JUN)

71      52. 236- 6              SUPERINTENDENCE BY THE CONTRACTOR (APR 1984)

At all times during performance of this contract and until the work is completed and accepted, the Contractor shall directly superintend the work or assign and have on the work site a competent superintendent who is satisfactory to the Contracting Officer and has authority to act for the Contractor.

(End of clause)

The Contractor shall, without additional expense to the Government, be responsible for obtaining any necessary licenses and permits, and for complying with any Federal, State, and municipal laws, codes, and regulations applicable to the performance of the work. The Contractor shall also be responsible for all damages to persons or property that occur as a result of the Contractor's fault or negligence. The Contractor shall also be responsible for all materials delivered and work performed until completion and acceptance of the entire work, except for any completed unit of work which may have been accepted under the contract.  
(End of clause)

The Government may undertake or award other contracts for additional work at or near the site of the work under this contract. The Contractor shall fully cooperate with the other contractors and with Government employees and shall carefully adapt scheduling and performing the work under this contract to accommodate the additional work, heeding any direction that may be provided by the Contracting Officer. The Contractor shall not commit or permit any act that will interfere with the performance of work by any other contractor or by Government employees.  
(End of clause)

(a) The Contractor shall preserve and protect all structures, equipment, and vegetation (such as trees, shrubs, and grass) on or adjacent to the work site, which are not to be removed and which do not unreasonably interfere with the work required under this contract. The Contractor shall only remove trees when specifically authorized to do so, and shall avoid damaging vegetation that will remain in place. If any limbs or branches of trees are broken during contract performance, or by the careless operation of equipment, or by workmen, the Contractor shall trim those limbs or branches with a clean cut and paint the cut with a tree-pruning compound as directed by the Contracting Officer.

(b) The Contractor shall protect from damage all existing improvements and utilities (1) at or near the work site, and (2) on adjacent property of a third party, the locations of which are made known to or should be known by the Contractor. The Contractor shall repair any damage to those facilities, including those that are the property of a third party, resulting from failure to comply with the requirements of this contract or failure to exercise reasonable care in performing the work. If the Contractor fails or refuses to repair the damage promptly, the Contracting Officer may have the necessary work performed and charge the cost to the Contractor.

(End of clause)

(a) The Contractor shall confine all operations (including storage of materials) on Government premises to areas authorized or approved

by the Contracting Officer. The Contractor shall hold and save the Government, its officers and agents, free and harmless from liability of any nature occasioned by the Contractor's performance.

(b) Temporary buildings (e. g., storage sheds, shops, offices) and utilities may be erected by the Contractor only with the approval of the Contracting Officer and shall be built with labor and materials furnished by the Contractor without expense to the Government. The temporary buildings and utilities shall remain the property of the Contractor and shall be removed by the Contractor at its expense upon completion of the work. With the written consent of the Contracting Officer, the buildings and utilities may be abandoned and need not be removed.

(c) The Contractor shall, under regulations prescribed by the Contracting Officer, use only established roadways, or use temporary roadways constructed by the Contractor when and as authorized by the Contracting Officer. When materials are transported in prosecuting the work, vehicles shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicle or prescribed by any Federal, State, or local law or regulation. When it is necessary to cross curbs or sidewalks, the Contractor shall protect them from damage. The Contractor shall repair or pay for the repair of any damaged curbs, sidewalks, or roads.

(End of clause)

76      52. 236- 11            USE AND POSSESSION PRIOR TO COMPLETION (APR 1984)

(a) The Government shall have the right to take possession of or use any completed or partially completed part of the work. Before taking possession of or using any work, the Contracting Officer shall furnish the Contractor a list of items of work remaining to be performed or corrected on those portions of the work that the Government intends to take possession of or use. However, failure of the Contracting Officer to list any item of work shall not relieve the Contractor of responsibility for complying with the terms of the contract. The Government's possession or use shall not be deemed an acceptance of any work under the contract.

(b) While the Government has such possession or use, the Contractor shall be relieved of the responsibility for the loss of or damage to the work resulting from the Government's possession or use, notwithstanding the terms of the clause in this contract entitled "Permits and Responsibilities." If prior possession or use by the Government delays the progress of the work or causes additional expense to the Contractor, an equitable adjustment shall be made in the contract price or the time of completion, and the contract shall be modified in writing accordingly.

(End of clause)

77      52. 236- 12            CLEANING UP (APR 1984)

The Contractor shall at all times keep the work area, including storage areas, free from accumulations of waste materials. Before completing the work, the Contractor shall remove from the work and premises any rubbish, tools, scaffolding, equipment, and materials that are not the property of the Government. Upon completing the work, the Contractor shall leave the work area in a clean, neat, and orderly condition satisfactory to the Contracting Officer.

(End of clause)

(a) The Contractor shall provide and maintain work environments and procedures which will (1) safeguard the public and Government personnel, property, materials, supplies, and equipment exposed to Contractor operations and activities; (2) avoid interruptions of Government operations and delays in project completion dates; and (3) control costs in the performance of this contract.

(b) For these purposes on contracts for construction or dismantling, demolition, or removal of improvements, the Contractor shall--

(1) Provide appropriate safety barricades, signs, and signal lights;

(2) Comply with the standards issued by the Secretary of Labor at 29 CFR Part 1926 and 29 CFR Part 1910; and

(3) Ensure that any additional measures the Contracting Officer determines to be reasonably necessary for the purposes are taken.

(c) If this contract is for construction or dismantling, demolition or removal of improvements with any Department of Defense agency or component, the Contractor shall comply with all pertinent provisions of the latest version of U. S. Army Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1, in effect on the date of the solicitation.

(d) Whenever the Contracting Officer becomes aware of any noncompliance with these requirements or any condition which poses a serious or imminent danger to the health or safety of the public or Government personnel, the Contracting Officer shall notify the Contractor orally, with written confirmation, and request immediate initiation of corrective action. This notice, when delivered to the Contractor or the Contractor's representative at the work site, shall be deemed sufficient notice of the noncompliance and that corrective action is required. After receiving the notice, the Contractor shall immediately take corrective action. If the Contractor fails or refuses to promptly take corrective action, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. The Contractor shall not be entitled to any equitable adjustment of the contract price or extension of the performance schedule on any stop work order issued under this clause.

(e) The Contractor shall insert this clause, including this paragraph (e), with appropriate changes in the designation of the parties, in subcontracts.

(End of clause)

(a) The Contractor shall, within five days after the work commences on the contract or another period of time determined by the Contracting Officer, prepare and submit to the Contracting Officer for approval three copies of a practicable schedule showing the order in which the Contractor proposes to perform the work, and the dates on which the Contractor contemplates starting and completing the several salient features of the work (including acquiring materials, plant, and equipment). The schedule shall be in the form of a progress chart of suitable scale to indicate appropriately the percentage of work scheduled for completion by any given date during the period. If the Contractor fails to submit a schedule within the time prescribed, the Contracting Officer may withhold approval of progress payments until the Contractor submits the required schedule.

(b) The Contractor shall enter the actual progress on the chart as directed by the Contracting Officer, and upon doing so shall immediately deliver three copies of the annotated schedule to the Contracting Officer.

If, in the opinion of the Contracting Officer, the Contractor falls behind the approved schedule, the Contractor shall take steps necessary to improve its progress, including those that may be required by the Contracting Officer, without additional cost to the Government. In this circumstance, the Contracting Officer may require the Contractor to increase the number of shifts, overtime operations, days of work, and/or the amount of construction plant, and to submit for approval any supplementary schedule or schedules in chart form as the Contracting Officer deems necessary to demonstrate how the approved rate of progress will be regained.

(c) Failure of the Contractor to comply with the requirements of the Contracting Officer under this clause shall be grounds for a determination by the Contracting Officer that the Contractor is not prosecuting the work with sufficient diligence to ensure completion within the time specified in the contract. Upon making this determination, the Contracting Officer may terminate the Contractor's right to proceed with the work, or any separable part of it, in accordance with the default terms of this contract.

(End of clause)

80      52.236-21      SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION (FEB 1997)

(a) The Contractor shall keep on the work site a copy of the drawings and specifications and shall at all times give the Contracting Officer access thereto. Anything mentioned in the specifications and not shown on the drawings, or shown on the drawings and not mentioned in the specifications, shall be of like effect as if shown or mentioned in both. In case of difference between drawings and specifications, the specifications shall govern. In case of discrepancy in the figures, in the drawings, or in the specifications, the matter shall be promptly submitted to the Contracting Officer, who shall promptly make a determination in writing. Any adjustment by the Contractor without such a determination shall be at its own risk and expense. The Contracting Officer shall furnish from time to time such detailed drawings and other information as considered necessary, unless otherwise provided.

(b) Wherever in the specifications or upon the drawings the words "directed", "required", "ordered", "designated", "prescribed", or words of like import are used, it shall be understood that the "direction", "requirement", "order", "designation", or "prescription", of the Contracting Officer is intended and similarly the words "approved", "acceptable", "satisfactory", or words of like import shall mean "approved by", or "acceptable to", or "satisfactory to" the Contracting Officer, unless otherwise expressly stated.

(c) Where "as shown", "as indicated", "as detailed", or words of similar import are used, it shall be understood that the reference is made to the drawings accompanying this contract unless stated otherwise. The word "provided" as used herein shall be understood to mean "provide complete in place," that is "furnished and installed".

(d) Shop drawings means drawings, submitted to the Government by the Contractor, subcontractor, or any lower tier subcontractor pursuant to a construction contract, showing in detail (1) the proposed fabrication and assembly of structural elements, and (2) the installation (i.e., fit, and attachment details) of materials or equipment. It includes drawings, diagrams, layouts, schematics, descriptive literature, illustrations, schedules, performance and test data, and similar materials furnished by the contractor to explain in detail specific portions of the work required by the contract. The Government may duplicate, use, and disclose in any manner and for any purpose shop drawings delivered under this contract.

(e) If this contract requires shop drawings, the Contractor shall coordinate all such drawings, and review them for accuracy, completeness, and compliance with contract requirements and shall indicate its approval thereon as evidence of such coordination and review. Shop drawings submitted to the Contracting Officer without evidence of the Contractor's approval may be returned for resubmission. The Contracting Officer will indicate an approval or disapproval of the shop drawings and if not approved as submitted shall indicate the Government's reasons therefor. Any work done before such approval shall be at the Contractor's risk. Approval by the Contracting Officer shall not relieve the Contractor from responsibility for any errors or omissions in such drawings, nor from responsibility for complying with the requirements of this contract, except with respect to variations described and approved in accordance with (f) below.

(f) If shop drawings show variations from the contract requirements, the Contractor shall describe such variations in writing, separate from the drawings, at the time of submission. If the Contracting Officer approves any such variation, the Contracting Officer shall issue an appropriate contract modification, except that, if the variation is minor or does not involve a change in price or in time of performance, a modification need not be issued.

(g) The Contractor shall submit to the Contracting Officer for approval four copies (unless otherwise indicated) of all shop drawings as called for under the various headings of these specifications. Three sets (unless otherwise indicated) of all shop drawings, will be retained by the Contracting Officer and one set will be returned to the Contractor.

(End of clause)

81      52. 236- 22      DESIGN WITHIN FUNDING LIMITATIONS (APR 1984)

(a) The Contractor shall accomplish the design services required under this contract so as to permit the award of a contract, using standard Federal Acquisition Regulation procedures for the construction of the facilities designed at a price that does not exceed the estimated construction contract price as set forth in paragraph (c) below. When bids or proposals for the construction contract are received that exceed the estimated price, the contractor shall perform such redesign and other services as are necessary to permit contract award within the funding limitation. These additional services shall be performed at no increase in the price of this contract. However, the Contractor shall not be required to perform such additional services at no cost to the Government if the unfavorable bids or proposals are the result of conditions beyond its reasonable control.

(b) The Contractor will promptly advise the Contracting Officer if it finds that the project being designed will exceed or is likely to exceed the funding limitations and it is unable to design a usable facility within these limitations. Upon receipt of such information, the Contracting Officer will review the Contractor's revised estimate of construction cost. The Government may, if it determines that the estimated construction contract price set forth in this contract is so low that award of a construction contract not in excess of such estimate is improbable, authorize a change in scope or materials as required to reduce the estimated construction cost to an amount within the estimated construction contract price set forth in paragraph (c) below, or the Government may adjust such estimated construction contract price. When bids or proposals are not solicited or are unreasonably delayed, the Government shall



prepare an estimate of constructing the design submitted and such estimate shall be used in lieu of bids or proposals to determine compliance with the funding limitation.

(c) The estimated construction contract price for the project described in this contract is \$shown in section 00100 where the amount of funds available for both design and construction of this project are stated.

(End of clause)

(R 608.3(a) and (b) 1971 APR)

82      52.236-23      RESPONSIBILITY OF THE ARCHITECT-ENGINEER CONTRACTOR  
(APR 1984)

(a) The Contractor shall be responsible for the professional quality, technical accuracy, and the coordination of all designs, drawings, specifications, and other services furnished by the Contractor under this contract. The Contractor shall, without additional compensation, correct or revise any errors or deficiencies in its designs, drawings, specifications, and other services.

(b) Neither the Government's review, approval or acceptance of, nor payment for, the services required under this contract shall be construed to operate as a waiver of any rights under this contract or of any cause of action arising out of the performance of this contract, and the Contractor shall be and remain liable to the Government in accordance with applicable law for all damages to the Government caused by the Contractor's negligent performance of any of the services furnished under this contract.

(c) The rights and remedies of the Government provided for under this contract are in addition to any other rights and remedies provided by law.

(d) If the Contractor is comprised of more than one legal entity, each such entity shall be jointly and severally liable hereunder.

(End of clause)

(R 7-607.2 1972 APR)

(V 7-607.20 1972 APR)

83      52.236-24      WORK OVERSIGHT IN ARCHITECT-ENGINEER CONTRACTS (APR 1984)

The extent and character of the work to be done by the Contractor shall be subject to the general oversight, supervision, direction, control, and approval of the Contracting Officer.

(End of clause)

(R 7-607.15 1965 JAN)

84      52.236-25      REQUIREMENTS FOR REGISTRATION OF DESIGNERS (APR 1984)

The design of architectural, structural, mechanical, electrical, civil, or other engineering features of the work shall be accomplished or reviewed and approved by architects or engineers registered to practice in the particular professional field involved in a State or possession of the United States, in Puerto Rico, or in the District of Columbia.

(End of clause)

(R 7-608.6 1972 APR)

85      52. 236- 7000      MODIFICATION PROPOSALS--PRICE BREAKDOWN (DEC 1991)

(a) The Contractor shall furnish a price breakdown, itemized as required and within the time specified by the Contracting Officer, with any proposal for a contract modification.

(b) The price breakdown--

(1) Must include sufficient detail to permit an analysis of profit, and of all costs for--

- (i) Material;
- (ii) Labor;
- (iii) Equipment;
- (iv) Subcontracts; and
- (v) Overhead; and

(2) Must cover all work involved in the modification, whether the work was deleted, added, or changed.

(c) The Contractor shall provide similar price breakdowns to support any amounts claimed for subcontracts.

(d) The Contractor's proposal shall include a justification for any time extension proposed.

(End of clause)

86      52. 242- 13      BANKRUPTCY (JUL 1995)

In the event the Contractor enters into proceedings relating to bankruptcy, whether voluntary or involuntary, the Contractor agrees to furnish, by certified mail or electronic commerce method authorized by the contract, written notification of the bankruptcy to the Contracting Officer responsible for administering the contract. This notification shall be furnished within five days of the initiation of the proceedings relating to bankruptcy filing. This notification shall include the date on which the bankruptcy petition was filed, the identity of the court in which the bankruptcy petition was filed, and a listing of Government contract numbers and contracting offices for all Government contracts against which final payment has not been made. This obligation remains in effect until final payment under this contract.

(End of clause)

87      52. 242- 14      SUSPENSION OF WORK (APR 1984)

(a) The Contracting Officer may order the Contractor, in writing, to suspend, delay, or interrupt all or any part of the work of this contract for the period of time that the Contracting Officer determines appropriate for the convenience of the Government.

(b) If the performance of all or any part of the work is, for an unreasonable period of time, suspended, delayed, or interrupted (1) by an act of the Contracting Officer in the administration of this contract, or (2) by the Contracting Officer's failure to act within the time specified in this contract (or within a reasonable time if not specified), an adjustment shall be made for any increase in the cost of performance of this contract (excluding profit) necessarily caused by the unreasonable suspension, delay, or interruption, and the contract modified in writing accordingly. However, no adjustment shall be made under this clause for any suspension, delay, or interruption to the extent that performance would have been so suspended, delayed, or interrupted by any other cause, including the fault or negligence of the Contractor, or for which an

equitable adjustment is provided for or excluded under any other term or condition of this contract.

(c) A claim under this clause shall not be allowed (1) for any costs incurred more than 20 days before the Contractor shall have notified the Contracting Officer in writing of the act or failure to act involved (but this requirement shall not apply as to a claim resulting from a suspension order), and (2) unless the claim, in an amount stated, is asserted in writing as soon as practicable after the termination of the suspension, delay, or interruption, but not later than the date of final payment under the contract.

(End of clause)

88      52. 242- 7000      POSTAWARD CONFERENCE (DEC 1991)

The Contractor agrees to attend any postaward conference convened by the contracting activity or contract administration office in accordance with Federal Acquisition Regulation Subpart 42. 5.

(End of clause)

89      52. 243- 4      CHANGES (AUG 1987)

(a) The Contracting Officer may, at any time, without notice to the sureties, if any, by written order designated or indicated to be a change order, make changes in the work within the general scope of the contract, including changes--

- (1) In the specifications (including drawings and designs);
- (2) In the method or manner of performance of the work;
- (3) In the Government-furnished facilities, equipment, materials, services, or site; or
- (4) Directing acceleration in the performance of the work.

(b) Any other written or oral order (which, as used in this paragraph (b), includes direction, instruction, interpretation, or determination) from the Contracting Officer that causes a change shall be treated as a change order under this clause; provided, that the Contractor gives the Contracting Officer written notice stating (1) the date, circumstances, and source of the order and (2) that the Contractor regards the order as a change order.

(c) Except as provided in this clause, no order, statement, or conduct of the Contracting Officer shall be treated as a change under this clause or entitle the Contractor to an equitable adjustment.

(d) If any change under this clause causes an increase or decrease in the Contractor's cost of, or the time required for, the performance of any part of the work under this contract, whether or not changed by any such order, the Contracting Officer shall make an equitable adjustment and modify the contract in writing. However, except for an adjustment based on defective specifications, no adjustment for any change under paragraph (b) of this clause shall be made for any costs incurred more than 20 days before the Contractor gives written notice as required. In the case of defective specifications for which the Government is responsible, the equitable adjustment shall include any increased cost reasonably incurred by the Contractor in attempting to comply with the defective specifications.

(e) The Contractor must assert its right to an adjustment under this clause within 30 days after (1) receipt of a written change order under paragraph (a) of this clause or (2) the furnishing of a written notice under paragraph (b) of this clause, by submitting to the Contracting

Officer a written statement describing the general nature and amount of the proposal, unless this period is extended by the Government. The statement of proposal for adjustment may be included in the notice under paragraph (b) above.

(f) No proposal by the Contractor for an equitable adjustment shall be allowed if asserted after final payment under this contract.

(End of clause)

90 52.243-7001 PRICING OF CONTRACT MODIFICATIONS (DEC 1991)

When costs are a factor in any price adjustment under this contract, the contract cost principles and procedures in FAR Part 31 and DFARS Part 231, in effect on the date of this contract, apply.

(End of clause)

91 52.243-7002 REQUESTS FOR EQUITABLE ADJUSTMENT (MAR 1998)

(a) The amount of any request for equitable adjustment to contract terms shall accurately reflect the contract adjustment for which the Contractor believes the Government is liable. The request shall include only costs for performing the change, and shall not include any costs that already have been reimbursed or that have been separately claimed. All indirect costs included in the request shall be properly allocable to the change in accordance with applicable acquisition regulations.

(b) In accordance with 10 U.S.C. 2410(a), any request for equitable adjustment to contract terms that exceeds the simplified acquisition threshold shall bear, at the time of submission, the following certificate executed by an individual authorized to certify the request on behalf of the Contractor:

I certify that the request is made in good faith, and that the supporting data are accurate and complete to the best of my knowledge and belief.

---

(Official's Name)

---

(Title)

(c) The certification in paragraph (b) of this clause requires full disclosure of all relevant facts, including--

(1) Cost or pricing data if required in accordance with subsection 15.403-4 of the Federal Acquisition Regulation (FAR); and

(2) Information other than cost or pricing data, in accordance with subsection 15.403-3 of the FAR, including actual cost data and data to support any estimated costs, even if cost or pricing data are not required.

(d) The certification requirement in paragraph (b) of this clause does not apply to--

(1) Requests for routine contract payments; for example, requests for payment for accepted supplies and services, routine vouchers under a cost-reimbursement type contract, or progress payment invoices; or

(2) Final adjustment under an incentive provision of the contract.

(End of clause)

92      52. 244- 4              SUBCONTRACTORS AND OUTSIDE ASSOCIATES AND CONSULTANTS  
(ARCHITECT- ENGINEER SERVICES) (AUG 1998)

Any subcontractors and outside associates or consultants required by the Contractor in connection with the services covered by the contract will be limited to individuals or firms that were specifically identified and agreed to during negotiations. The Contractor shall obtain the Contracting Officer's written consent before making any substitution for these subcontractors, associates, or consultants.

(End of clause)

93      52. 244- 6              SUBCONTRACTS FOR COMMERCIAL ITEMS AND COMMERCIAL  
COMPONENTS (OCT 1998)

(a) Definition.

"Commercial item," as used in this clause, has the meaning contained in the clause at 52.202-1, Definitions.

"Subcontract," as used in this clause, includes a transfer of commercial items between divisions, subsidiaries, or affiliates of the Contractor or subcontractor at any tier.

(b) To the maximum extent practicable, the Contractor shall incorporate, and require its subcontractors at all tiers to incorporate, commercial items or nondevelopmental items as components of items to be supplied under this contract.

(c) Notwithstanding any other clause of this contract, the Contractor is not required to include any FAR provision or clause, other than those listed below to the extent they are applicable and as may be required to establish the reasonableness of prices under Part 15, in a subcontract at any tier for commercial items or commercial components:

- (1) 52.222-26, Equal Opportunity (E.O. 11246);
- (2) 52.222-35, Affirmative Action for Disabled Veterans and Veterans of the Vietnam Era (38 U.S.C. 4212(a));
- (3) 52.222-36, Affirmative Action for Workers with Disabilities (29 U.S.C. 793); and
- (4) 52.247-64, Preference for Privately Owned U.S.-Flagged Commercial Vessels (46 U.S.C. 1241) (flow down not required for subcontracts awarded beginning May 1, 1996).

(d) The Contractor shall include the terms of this clause, including this paragraph (d), in subcontracts awarded under this contract.

(End of clause)

94      52. 246- 12              INSPECTION OF CONSTRUCTION (AUG 1996)

(a) Definition. "Work" includes, but is not limited to, materials, workmanship, and manufacture and fabrication of components.

(b) The Contractor shall maintain an adequate inspection system and perform such inspections as will ensure that the work performed under the contract conforms to contract requirements. The Contractor shall maintain complete inspection records and make them available to the Government. All work shall be conducted under the general direction of the Contracting Officer and is subject to Government inspection and test at all places and at all reasonable times before acceptance to ensure strict compliance with the terms of the contract.

(c) Government inspections and tests are for the sole benefit of the Government and do not--

(1) Relieve the Contractor of responsibility for providing adequate quality control measures;

(2) Relieve the Contractor of responsibility for damage to or loss of the material before acceptance;

(3) Constitute or imply acceptance; or

(4) Affect the continuing rights of the Government after acceptance of the completed work under paragraph (i) below.

(d) The presence or absence of a Government inspector does not relieve the Contractor from any contract requirement, nor is the inspector authorized to change any term or condition of the specification without the Contracting Officer's written authorization.

(e) The Contractor shall promptly furnish, at no increase in contract price, all facilities, labor, and material reasonably needed for performing such safe and convenient inspections and tests as may be required by the Contracting Officer. The Government may charge to the Contractor any additional cost of inspection or test when work is not ready at the time specified by the Contractor for inspection or test, or when prior rejection makes reinspection or retest necessary. The Government shall perform all inspections and tests in a manner that will not unnecessarily delay the work. Special, full size, and performance tests shall be performed as described in the contract.

(f) The Contractor shall, without charge, replace or correct work found by the Government not to conform to contract requirements, unless in the public interest the Government consents to accept the work with an appropriate adjustment in contract price. The Contractor shall promptly segregate and remove rejected material from the premises.

(g) If the Contractor does not promptly replace or correct rejected work, the Government may (1) by contract or otherwise, replace or correct the work and charge the cost to the Contractor or (2) terminate for default the Contractor's right to proceed.

(h) If, before acceptance of the entire work, the Government decides to examine already completed work by removing it or tearing it out, the Contractor, on request, shall promptly furnish all necessary facilities, labor, and material. If the work is found to be defective or nonconforming in any material respect due to the fault of the Contractor or its subcontractors, the Contractor shall defray the expenses of the examination and of satisfactory reconstruction. However, if the work is found to meet contract requirements, the Contracting Officer shall make an equitable adjustment for the additional services involved in the examination and reconstruction, including, if completion of the work was thereby delayed, an extension of time.

(i) Unless otherwise specified in the contract, the Government shall accept, as promptly as practicable after completion and inspection, all work required by the contract or that portion of the work the Contracting Officer determines can be accepted separately. Acceptance shall be final and conclusive except for latent defects, fraud, gross mistakes amounting to fraud, or the Government's rights under any warranty or guarantee.

(End of clause)

95      52.249-2 I      TERMINATION FOR CONVENIENCE OF THE GOVERNMENT  
(FIXED-PRICE) (SEP 1996) -- ALTERNATE I (SEP 1996)

(a) The Government may terminate performance of work under this contract in whole or, from time to time, in part if the Contracting Officer determines that a termination is in the Government's interest. The Contracting Officer shall terminate by delivering to the Contractor a

Notice of Termination specifying the extent of termination and the effective date.

(b) After receipt of a Notice of Termination, and except as directed by the Contracting Officer, the Contractor shall immediately proceed with the following obligations, regardless of any delay in determining or adjusting any amounts due under this clause:

(1) Stop work as specified in the notice.

(2) Place no further subcontracts or orders (referred to as subcontracts in this clause) for materials, services, or facilities, except as necessary to complete the continued portion of the contract.

(3) Terminate all subcontracts to the extent they relate to the work terminated.

(4) Assign to the Government, as directed by the Contracting Officer, all right, title, and interest of the Contractor under the subcontracts terminated, in which case the Government shall have the right to settle or to pay any termination settlement proposal arising out of those terminations.

(5) With approval or ratification to the extent required by the Contracting Officer, settle all outstanding liabilities and termination settlement proposals arising from the termination of subcontracts; the approval or ratification will be final for purposes of this clause.

(6) As directed by the Contracting Officer, transfer title and deliver to the Government (i) the fabricated or unfabricated parts, work in process, completed work, supplies, and other material produced or acquired for the work terminated, and (ii) the completed or partially completed plans, drawings, information, and other property that, if the contract had been completed, would be required to be furnished to the Government.

(7) Complete performance of the work not terminated.

(8) Take any action that may be necessary, or that the Contracting Officer may direct, for the protection and preservation of the property related to this contract that is in the possession of the Contractor and in which the Government has or may acquire an interest.

(9) Use its best efforts to sell, as directed or authorized by the Contracting Officer, any property of the types referred to in subparagraph (b)(6) of this clause; provided, however, that the Contractor (i) is not required to extend credit to any purchaser and (ii) may acquire the property under the conditions prescribed by, and at prices approved by, the Contracting Officer. The proceeds of any transfer or disposition will be applied to reduce any payments to be made by the Government under this contract, credited to the price or cost of the work, or paid in any other manner directed by the Contracting Officer.

(c) The Contractor shall submit complete termination inventory schedules no later than 120 days from the effective date of termination, unless extended in writing by the Contracting Officer upon written request of the Contractor within this 120-day period.

(d) After expiration of the plant clearance period as defined in Subpart 45.6 of the Federal Acquisition Regulation, the Contractor may submit to the Contracting Officer a list, certified as to quantity and quality, of termination inventory not previously disposed of, excluding items authorized for disposition by the Contracting Officer. The Contractor may request the Government to remove those items or enter into an agreement for their storage. Within 15 days, the Government will accept title to those items and remove them or enter into a storage agreement. The Contracting Officer may verify the list upon removal of the items, or if stored, within 45 days from submission of the list, and shall correct the

list, as necessary, before final settlement.

(e) After termination, the Contractor shall submit a final termination settlement proposal to the Contracting Officer in the form and with the certification prescribed by the Contracting Officer. The Contractor shall submit the proposal promptly, but no later than 1 year from the effective date of termination, unless extended in writing by the Contracting Officer upon written request of the Contractor within this 1 year period. However, if the Contracting Officer determines that the facts justify it, a termination settlement proposal may be received and acted on after 1 year or any extension. If the Contractor fails to submit the proposal within the time allowed, the Contracting Officer may determine, on the basis of information available, the amount, if any, due the Contractor because of the termination and shall pay the amount determined.

(f) Subject to paragraph (e) of this clause, the Contractor and the Contracting Officer may agree upon the whole or any part of the amount to be paid or remaining to be paid because of the termination. The amount may include a reasonable allowance for profit on work done. However, the agreed amount, whether under this paragraph (f) or paragraph (g) of this clause, exclusive of costs shown in subparagraph (g)(3) of this clause, may not exceed the total contract price as reduced by (1) the amount of payments previously made and (2) the contract price of work not terminated. The contract shall be modified, and the Contractor paid the agreed amount. Paragraph (g) of this clause shall not limit, restrict, or affect the amount that may be agreed upon to be paid under this paragraph.

(g) If the Contractor and Contracting Officer fail to agree on the whole amount to be paid the Contractor because of the termination of work, the Contracting Officer shall pay the Contractor the amounts determined as follows, but without duplication of any amounts agreed upon under paragraph (f) of this clause:

(1) For contract work performed before the effective date of termination, the total (without duplication of any items) of--

(i) The cost of this work;

(ii) The cost of settling and paying termination settlement proposals under terminated subcontracts that are properly chargeable to the terminated portion of the contract if not included in subdivision (g)(1)(i) of this clause; and

(iii) A sum, as profit on subdivision (g)(1)(i) of this clause, determined by the Contracting Officer under 49.202 of the Federal Acquisition Regulation, in effect on the date of this contract, to be fair and reasonable; however, if it appears that the Contractor would have sustained a loss on the entire contract had it been completed, the Contracting Officer shall allow no profit under this subdivision (iii) and shall reduce the settlement to reflect the indicated rate of loss.

(2) The reasonable costs of settlement of the work terminated,

including--

(i) Accounting, legal, clerical, and other expenses reasonably necessary for the preparation of termination settlement proposals and supporting data;

(ii) The termination and settlement of subcontracts (excluding the amounts of such settlements); and

(iii) Storage, transportation, and other costs incurred, reasonably necessary for the preservation, protection, or disposition of the termination inventory.

(h) Except for normal spoilage, and except to the extent that the Government expressly assumed the risk of loss, the Contracting Officer shall exclude from the amounts payable to the Contractor under paragraph (g) of this clause, the fair value, as determined by the Contracting



Officer, of property that is destroyed, lost, stolen, or damaged so as to become undeliverable to the Government or to a buyer.

(i) The cost principles and procedures of Part 31 of the Federal Acquisition Regulation, in effect on the date of this contract, shall govern all costs claimed, agreed to, or determined under this clause.

(j) The Contractor shall have the right of appeal, under the Disputes clause, from any determination made by the Contracting Officer under paragraph (e), (g), or (l) of this clause, except that if the Contractor failed to submit the termination settlement proposal or request for equitable adjustment within the time provided in paragraph (e) or (l), respectively, and failed to request a time extension, there is no right of appeal.

(k) In arriving at the amount due the Contractor under this clause, there shall be deducted--

(1) All unliquidated advance or other payments to the Contractor under the terminated portion of this contract;

(2) Any claim which the Government has against the Contractor under this contract; and

(3) The agreed price for, or the proceeds of sale of, materials, supplies, or other things acquired by the Contractor or sold under the provisions of this clause and not recovered by or credited to the Government.

(l) If the termination is partial, the Contractor may file a proposal with the Contracting Officer for an equitable adjustment of the price(s) of the continued portion of the contract. The Contracting Officer shall make any equitable adjustment agreed upon. Any proposal by the Contractor for an equitable adjustment under this clause shall be requested within 90 days from the effective date of termination unless extended in writing by the Contracting Officer.

(m)(1) The Government may, under the terms and conditions it prescribes, make partial payments and payments against costs incurred by the Contractor for the terminated portion of the contract, if the Contracting Officer believes the total of these payments will not exceed the amount to which the Contractor will be entitled.

(2) If the total payments exceed the amount finally determined to be due, the Contractor shall repay the excess to the Government upon demand, together with interest computed at the rate established by the Secretary of the Treasury under 50 U.S.C. App. 1215(b)(2). Interest shall be computed for the period from the date the excess payment is received by the Contractor to the date the excess is repaid. Interest shall not be charged on any excess payment due to a reduction in the Contractor's termination settlement proposal because of retention or other disposition of termination inventory until 10 days after the date of the retention or disposition, or a later date determined by the Contracting Officer because of the circumstances.

(n) Unless otherwise provided in this contract or by statute, the Contractor shall maintain all records and documents relating to the terminated portion of this contract for 3 years after final settlement. This includes all books and other evidence bearing on the Contractor's costs and expenses under this contract. The Contractor shall make these records and documents available to the Government, at the Contractor's office, at all reasonable times, without any direct charge. If approved by the Contracting Officer, photographs, microphotographs, or other authentic reproductions may be maintained instead of original records and documents.

(End of clause)

(a) If the Contractor refuses or fails to prosecute the work or any separable part, with the diligence that will insure its completion within the time specified in this contract including any extension, or fails to complete the work within this time, the Government may, by written notice to the Contractor, terminate the right to proceed with the work (or the separable part of the work) that has been delayed. In this event, the Government may take over the work and complete it by contract or otherwise, and may take possession of and use any materials, appliances, and plant on the work site necessary for completing the work. The Contractor and its sureties shall be liable for any damage to the Government resulting from the Contractor's refusal or failure to complete the work within the specified time, whether or not the Contractor's right to proceed with the work is terminated. This liability includes any increased costs incurred by the Government in completing the work.

(b) The Contractor's right to proceed shall not be terminated nor the Contractor charged with damages under this clause, if-

(1) The delay in completing the work arises from unforeseeable causes beyond the control and without the fault or negligence of the Contractor. Examples of such causes include (i) acts of God or of the public enemy, (ii) acts of the Government in either its sovereign or contractual capacity, (iii) acts of another Contractor in the performance of a contract with the Government, (iv) fires, (v) floods, (vi) epidemics, (vii) quarantine restrictions, (viii) strikes, (ix) freight embargoes, (x) unusually severe weather, or (xi) delays of subcontractors or suppliers at any tier arising from unforeseeable causes beyond the control and without the fault or negligence of both the Contractor and the subcontractors or suppliers; and

(2) The Contractor, within 10 days from the beginning of any delay (unless extended by the Contracting Officer), notifies the Contracting Officer in writing of the causes of delay. The Contracting Officer shall ascertain the facts and the extent of delay. If, in the judgment of the Contracting Officer, the findings of fact warrant such action, the time for completing the work shall be extended. The findings of the Contracting Officer shall be final and conclusive on the parties, but subject to appeal under the Disputes clause.

(c) If, after termination of the Contractor's right to proceed, it is determined that the Contractor was not in default, or that the delay was excusable, the rights and obligations of the parties will be the same as if the termination had been issued for the convenience of the Government.

(d) The rights and remedies of the Government in this clause are in addition to any other rights and remedies provided by law or under this contract.

(End of clause)

END OF SECTION 00700

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## SPECIAL CLAUSES

## SC-1. COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK (APR 1984) (FAR 52.211-10).

(a) The Contractor shall be required to (1) commence work under this Contract within 10 calendar days after the date the Contractor receives the notice to proceed for design, (2) prosecute the work diligently, and (3) complete the entire work ready for use ~~not later than 570 calendar days after date of receipt by Contractor of notice to proceed for design~~ within the times indicated in the table below. The time stated for completion shall include all work for Phase II and Phase III line items, and final cleanup of the premises.

<u>WORK ITEM</u>	<u>TIME FOR COMPLETION</u>
<u>All work except Optional Item 0008</u>	<u>570 calendar days after date of receipt by Contractor of notice to proceed with design of project</u>
<u>All work for Optional Item 0008</u>	<u>360 calendar days after date of receipt by Contractor of notice to proceed with design for this work.</u>

(b) Exception to Completion Period(s): In case the Contracting Officer determines that completion of seeding and establishment of same is not feasible within the completion period(s) stated above, the Contractor shall accomplish such work in the first planting period following the contract completion period and shall complete such work as specified, unless other planting periods are directed or approved by the Contracting Officer.

## SC-1.1 OPTION FOR INCREASED QUANTITY

a. The Government may increase the quantity of work awarded by exercising one or more of the Optional Bid Items 0005 through 0007, and 0009 and 0010 at any time, or not at all, but no later than 120 calendar days after receipt by Contractor of notice to proceed for design. The Government may increase the quantity of work awarded by exercising Optional Bid 0008 at any time, or not at all, but no later than 360 calendar days after receipt by Contractor of notice to proceed for design. Notice to proceed on work Item(s) added by exercise of the option(s) will be given upon execution of consent of surety.

b. The parties hereto further agree that any option herein shall be considered to have been exercised at the time the Government deposits written notification to the Contractor in the mails.

~~c. The time allowed for completion of any optional items awarded under this contract will be the same as that for the base item(s), and will be measured from the date of receipt of the notice to proceed for the base item(s).~~

## SC-2. LIQUIDATED DAMAGES - CONSTRUCTION (APR 1984) (FAR 52.211-12)

(a) If the Contractor fails to complete the work within the time specified in the Contract, or any extension, the Contractor shall pay to the Government as liquidated damages, the sum of \$1,098.00 for each day of delay.

(b) If the Government terminates the Contractor's right to proceed, the resulting damage will consist of liquidated damages until such reasonable time as may be required for final completion of the work together with any increased costs occasioned the Government in completing the work.

(c) If the Government does not terminate the Contractor's right to proceed, the resulting damage will consist of liquidated damages until the work is completed or accepted.

SC-3 AND SC-4 DELETED.

SC-5. INSURANCE - WORK ON A GOVERNMENT INSTALLATION (SEP 1989) (FAR 52.228-5)

(a) The Contractor shall, at its own expense, provide and maintain during the entire performance period of this Contract at least the kinds and minimum amounts of insurance required in the Insurance Liability Schedule or elsewhere in the Contract.

(b) Before commencing work under this Contract, the Contractor shall certify to the Contracting Officer in writing that the required insurance has been obtained. The policies evidencing required insurance shall contain an endorsement to the effect that any cancellation or any material change adversely affecting the Government's interest shall not be effective:

(1) for such period as the laws of the State in which this Contract is to be performed prescribe; or

(2) until 30 days after the insurer or the Contractor gives written notice to the Contracting Officer, whichever period is longer.

(c) The Contractor shall insert the substance of this clause, including this paragraph (c), in subcontracts under this Contract that require work on a Government installation and shall require subcontractors to provide and maintain the insurance required in the Schedule or elsewhere in the Contract. The Contractor shall maintain a copy of all subcontractors' proofs of required insurance, and shall make copies available to the Contracting Officer upon request.

(d) Insurance Liability Schedule (FAR 28.307-2)

(1) Workers' compensation and employer's liability. Contractors are required to comply with applicable Federal and State workers' compensation and occupational disease statutes. If occupational diseases are not compensable under those statutes, they shall be covered under the employer's liability section of the insurance policy, except when Contract operations are so commingled with a Contractor's commercial operation that it would not be practical to require this coverage. Employer's liability coverage of at least \$100,000 shall be required, except in states with exclusive or monopolistic funds that do not permit workers' compensation to be written by private carriers.

(2) General Liability.

(a) The Contracting Officer shall require bodily injury liability insurance coverage written on the comprehensive form of policy of at least \$500,000 per occurrence.

(b) Property damage liability insurance shall be required only in special circumstances as determined by the agency.

(3) Automobile liability. The Contracting Officer shall require automobile liability insurance written on the comprehensive form of policy. The policy shall provide for bodily injury and property damage liability covering the operation of all automobiles used in connection with performing the Contract. Policies covering automobiles operated in the United States shall provide coverage of at least \$200,000 per person and \$500,000 per occurrence for bodily injury and \$20,000 per occurrence for property damage. The amount of liability coverage on other policies shall be commensurate with any legal requirements of the locality and sufficient to meet normal and customary claims.

(4) Aircraft public and passenger liability. When aircraft are used in connection with performing the Contract, the Contracting Officer shall require aircraft public and passenger liability insurance. Coverage shall be at least \$200,000 per person and \$500,000 per occurrence for bodily injury, other than passenger liability, and \$200,000 per occurrence for property damage. Coverage for passenger liability bodily injury shall be at least \$200,000 multiplied by the number of seats or passengers, whichever is greater.

(5) Environmental Liability. If this contract includes the transport, treatment, storage, or disposal of hazardous material waste the following coverage is required.

The Contractor shall ensure the transporter and disposal facility have liability insurance in effect for claims arising out of the death or bodily injury and property damage from hazardous material/waste transport, treatment, storage and disposal, including vehicle liability and legal defense costs in the amount of \$1,000,000.00 as evidenced by a certificate of insurance for General, Automobile, and Environmental Liability Coverage. Proof of this insurance shall be provided to the Contracting Officer.

SC-6 DELETED.

SC-7. PERFORMANCE OF WORK BY THE CONTRACTOR (APR 1984) (FAR 52.236-1): The Contractor shall perform on the site, and with its own organization, work equivalent to at least 15 % (fifteen percent) of the total amount of work to be performed under the Contract. The percentage may be reduced by a supplemental agreement to this Contract if, during performing the work, the Contractor requests a reduction and the Contracting Officer determines that the reduction would be to the advantage of the Government.

SC-8. PHYSICAL DATA (APR 1984) (FAR 52.236-4): Data and information furnished or referred to below is for the Contractor's information. The Government will not be responsible for any interpretation of or conclusion drawn from the data or information by the Contractor.

(a) Weather Conditions: Each bidder shall be satisfied before submitting his bid as to the hazards likely to arise from weather conditions. Complete weather records and reports may be obtained from any National Weather Service Office.

(b) Transportation Facilities: Each bidder, before submitting his bid, shall make an investigation of the conditions of existing public and private roads and of clearances, restrictions, bridge load limits, and other limitations affecting transportation and ingress and egress at the jobsite. The unavailability of transportation facilities or limitations thereon shall not become a basis for claims for damages or extension of time for completion of the work.

(c) Right-of-Way: The right-of-way for the work covered by these specifications will be furnished by the Government, except that the Contractor shall provide right-of-way for ingress and egress across private property where necessary to gain access to the jobsite. The Contractor may use such portions of the land within the right-of-way not otherwise occupied as may be designated by the Contracting Officer. The Contractor shall, without expense to the Government, and at any time during the progress of the work when space is needed within the right-of-way for any other purposes, promptly vacate and clean up any part of the grounds that have been allotted to, or have been in use by, him when directed to do so by the Contracting Officer. The Contractor shall keep the buildings and grounds in use by him at the site of the work in an orderly and sanitary condition. Should the Contractor require additional working space or lands for material yards, job offices, or other purposes, he shall obtain such additional lands or easements at his expense. Legal descriptions of the assigned right-of-way are attached to the drawings.

SC-9 DELETED.

SC-10. LAYOUT OF WORK (APR 1984) (FAR 52.236-17): The Contractor shall lay out its work from Government-referenced base lines and bench marks indicated on the drawings, and shall be responsible for all measurements in connection with the layout. The Contractor shall furnish, at its own expense, all stakes, templates, platforms, equipment, tools, materials, and labor required to lay out any part of the work. The Contractor shall be responsible for executing the work to the lines and grades that may be established or indicated by the Contracting Officer. The Contractor shall also be responsible for maintaining and preserving all stakes and other marks established by the Contracting Officer until authorized to remove them. If such marks are destroyed by the Contractor or through its negligence before their removal is authorized, the Contracting Officer may replace them and deduct the expense of the replacement from any amounts due, or to become due, to the Contractor.

SC-11 THROUGH SC-13 DELETED.

SC-14. EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE (MAR 1995)-(EFARS 52.231-5000)

(a) This clause does not apply to terminations. See 52.249-5000, Basis for Settlement of Proposals and FAR Part 49.

(b) Allowable cost for construction and marine plant and equipment in sound workable condition owned or controlled and furnished by a contractor or subcontractor at any tier shall be based on actual cost data for each piece of equipment or groups of similar serial and series for which the Government can determine both ownership and operating costs from the contractor's accounting records. When both ownership and operating costs cannot be determined for any piece of equipment or groups of similar serial or series equipment from the contractor's accounting records, costs for that equipment shall be based upon the applicable provisions of EP 1110-1-8, Construction Equipment Ownership and Operating Expense Schedule, Region VIII.

Working conditions shall be considered to be average for determining equipment rates using the schedule unless specified otherwise by the contracting officer. For equipment not included in the schedule, rates for comparable pieces of equipment may be used or a rate may be developed using the formula provided in the schedule. For forward pricing, the schedule in effect at the time of negotiations shall apply. For retroactive pricing, the schedule in effect at the time the work was performed shall apply.

(c) Equipment rental costs are allowable, subject to the provisions of FAR 31.105(d)(ii) and FAR 31.205-36. Rates for equipment rented from an organization under common control, lease-purchase arrangements, and sale-leaseback arrangements, will be determined using the schedule, except that actual rates will be used for equipment leased from an organization under common control that has an established practice of leasing the same or similar equipment to unaffiliated lessees.

(d) When actual equipment costs are proposed and the total amount of the pricing action exceeds the small purchase threshold, the contracting officer shall request the contractor to submit either certified cost or pricing data, or partial/limited data, as appropriate. The data shall be submitted on Standard Form 1411, Contract Pricing Proposal Cover Sheet.

(e) Copies of EP1110-1-8 "Construction Equipment Ownership and Operating Expense Schedule" Volume 4 (Montana) and Volume 8 (Washington, Oregon and Idaho) are available from the Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954, phone (202) 512-1800 and fax (202) 512-2250, OR from the Government Bookstore in the Jackson Federal Building, Seattle, WA, phone (206) 553-4279. The cost is \$28.00 for each volume. Use the following stock numbers when ordering schedules:

S/N 008-022-00300-2	Volume 4
S/N 008-022-00304-5	Volume 8

SC-15. PAYMENT FOR MATERIALS DELIVERED OFF-SITE (MAR 1995)-(EFARS 52.232-5000)

(a) Pursuant to FAR clause 52.232-5, Payments Under Fixed Priced Construction Contracts, materials delivered to the contractor at locations other than the site of the work may be taken into consideration in making payments if included in payment estimates and if all the conditions of the General Provisions are fulfilled. Payment for items delivered to locations other than the work site will be limited to: (1) materials required by the technical provisions; or (2) materials that have been fabricated to the point where they are identifiable to an item of work required under this contract.

(b) Such payment will be made only after receipt of paid or receipted invoices or invoices with canceled check showing title to the items in the prime contractor and including the value of material and labor incorporated into the item. In addition to petroleum products, payment for materials delivered off-site is limited to the following items: Any other construction material stored offsite may be considered in determining the amount of a progress payment.



**SC-16 ORDER OF PRECEDENCE - DESIGN/BUILD CONTRACT**

(a) The contract includes the standard contract clauses and schedules current at the time of contract award. It entails (1) the solicitation in its entirety, including all drawings, cuts, and illustrations and any amendments, and (2) the successful offeror's accepted proposal. The contract constitutes and defines the entire agreement between the Contractor and the Government. No documentation shall be omitted which in any way bears upon the terms of that agreement.

(b) In the event of conflict or inconsistency between any of the provisions of this contract, including the Request for Proposal, Contractor's proposal, or contract deliverable, precedence shall be given in the following order:

(1) Betterments: Any portions of the accepted proposal, or any subsequent design or other submittal, which both conform to and exceed the provisions of the Request for Proposal. "Betterment" is defined as any product, component, or system, which exceeds the minimum requirements stated in the Request for Proposal.

(2) The provisions of the solicitation, including drawings and attachments.

(3) All other provisions of the accepted proposal including RFP Section 00010.

(4) Any design products including, but not limited to, plans, specifications, engineering studies and analyses, shop drawings, equipment installation drawings, etc. These are "deliverables" under the contract and must conform to or exceed all provisions of the contract, in order of precedence herein.

**SC-17. LIMITATION OF PAYMENT FOR DESIGN:** If it should be necessary to terminate this contract, for any reason, prior to completion, the Government will pay the Contractor a fair and reasonable price for the design or construction services performed and delivered to the Government. However, such payment will not exceed a sum greater than the amount allowable under 10 USC 4540 regardless of the actual costs the Contractor may be able to substantiate.

**SC-18. CONTRACT DRAWINGS, MAPS, AND SPECIFICATIONS (OCT 1996) (52.0236-4001 EBS)**

(a) The Government--

(1) Will provide the Contractor, without charge, one set of contract drawings and one set of specifications in electronic format on a compact disk. The Government will not give the Contractor any hard copy paper drawings or specifications for any contract resulting from this solicitation.

(b) The Contractor shall--

(1) check all drawings furnished immediately upon receipt;

(2) Compare all drawings and verify the figures before laying out the work;

(3) Promptly notify the Contracting Officer of any discrepancies;

and

(4) Be responsible for any errors which might have been avoided by complying with this paragraph (b).

(c) Large scale drawings shall, in general, govern small scale drawings. Figures marked on drawings shall, in general, be followed in preference to scale measurements.

(d) Omissions from the drawings or specifications or the misdescription of details of work which are manifestly necessary to carry out the intent of the drawings and specifications, or which are customarily performed, shall not relieve the Contractor from performing such omitted or misdescribed details of the work, but shall be performed as if fully and correctly set forth and described in the drawings and specifications.

(e) The work shall conform to the specifications and the contract drawings identified in the index of drawings attached at the end of the Special Clauses.

SC-19 DELETED.

#### SC-20. COMPLIANCE CERTIFICATION

The offeror shall certify, in the technical proposal cover letter and by note on each sheet of working drawings, that all items submitted in proposal and final design documents comply with RFP requirements. The requirements specified in the RFP are binding contract requirements. In case of any conflicts after the contract award between the requirements stated in the RFP and the offeror's proposal, the RFP requirements shall govern.

SC-21 DELETED.

SC-22. EPA ENERGY STAR: The Government requires that certain equipment be Energy Star compliant. Initially, the sole Energy Star requirement shall be the self-certification by the bidder that the specified equipment is Energy Star compliant. Within 3 months of the availability of an EPA sanctioned test for Energy Star compliance, the Contractor shall submit all equipment upgrades and additions for testing and provide proof of compliance to the Government upon completion of testing. Testing shall be at the Contractor's expense.

#### SC-23. YEAR 2000 COMPLIANCE:

a. In accordance with FAR 39.106, the Contractor shall ensure that with respect to any design, construction, goods, or services under this contract as well as any subsequent task/delivery orders issued under this contract (if applicable), all information technology contained therein shall be Year 2000 compliant. Specifically:

b. The Contractor shall:

(1) Perform, maintain, and provide an inventory of all major components to include structures, equipment, items, parts, and furnishings under this contract and each task/delivery order which may be affected by the Year 2000 compliance requirement.

(2) Indicate whether each component is currently Year 2000 compliant or requires an upgrade for compliance prior to Government acceptance.

SC-24. RECOVERED MATERIALS: The Corps of Engineers encourages all bidders to utilize recovered materials to the maximum extent practicable. The attached APPENDIX R contains procurement guidelines for products containing recovered materials.

APPENDIX R

PART 247 - COMPREHENSIVE PROCUREMENT GUIDELINE FOR PRODUCTS CONTAINING RECOVERED MATERIALS

40 CFR Ch. 1 (7-7-96 Edition)

Subpart B-Item Designations

§ 247.10 Paper and paper products.

Paper and paper products, excluding building and construction paper grades.

§ 247.11 Vehicular products.

(a) Lubricating oils containing refined oil, including engine lubricating oils, hydraulic fluids, and gear oils, excluding marine and aviation oils.

(b) Tires, excluding airplane tire

(e) Reclaimed engine coolants, excluding coolants used in non-vehicular applications.

247.12 Construction products.

(a) Building insulation product including the following items:

(1) Loose-fill insulation, including but not limited to cellulose fiber, mineral fibers (fiberglass and rock vermiculite, and perlite;

(2) Blanket and batt insulation, including but not limited to mineral fibers (fiberglass and rock wool);

(3) Board (sheathing, roof decking wall panel) insulation, including but not limited to structural fiber and laminated paperboard products perlite composite board, polyurethane, polyisocyanurate, polystyrene, phenolics, and composites; and

(4) Spray-in-place insulation, including but not limited to foam-in polyurethane and polyisocyanurate and spray-on cellulose.

(b) Structural fiberboard and laminated paperboard products for applications other than building insulation, including building board, sheathing shingle backer, sound deadening roof insulating board, insulating board, acoustical and non-acoustical ceiling tile, acoustical and non-acoustical lay-in panels underlayments, and roof overlay (coverboard).

(c) Cement and concrete, including concrete products such as pipe block, containing coal fly as ground granulated blast furnace (GGBF) slag.

(d) Carpet made of polyester fiber use in low- and medium-wear applications.

(e) Floor tiles and patio block containing recovered rubber or plastic.

§247.13 Transportation products.

Traffic barricades and traffic used in controlling or restricting vehicular traffic.

§ 247.14 Park and recreation products

Playground surfaces and running tracks containing recovered rubber or plastic.

247.15 Landscaping products.

(a) Hydraulic mulch products containing recovered paper or recovered wood used for hydroseeding and over-spray for straw mulch in landscaping, erosion control, and soil reclamation.

(b) Compost made from yard trimmings, leaves, and/or grass clippings for use in landscaping, seeding of or other plants on roadsides and embankments, as a nutritious under trees and shrubs, and in erosion control and soil reclamation.

§ 247.16 Non-paper office product.

(a) Office recycling containers and office waste receptacles.

(b) Plastic desktop accessories.

(c) Toner cartridges.

(d) Binders.

(e) Plastic trash bags.

# DESIGN AUTHENTICATION

ENHANCED TRAINING IN IDAHO, PHASE II AND PHASE III  
MT. HOME AFB, IDAHO

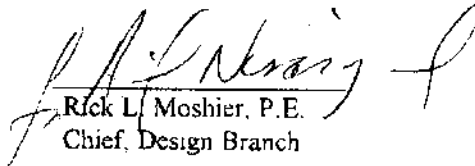
Signatures affixed below indicate the drawings and specifications included in this solicitation were prepared, reviewed and certified in accordance with Department of Army Engineer Regulation ER 1110-345-100, DESIGN POLICY FOR MILITARY CONSTRUCTION.



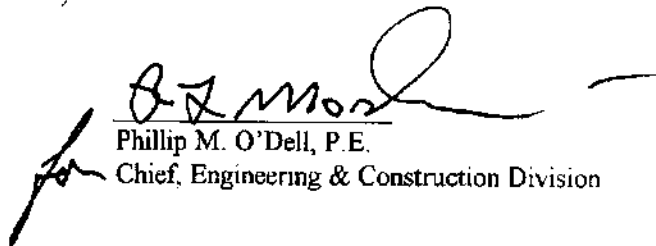
Dean M. Schmidt  
Chief, Tech. Eng. & Review Section,  
Construction Branch



Nurhan Tan  
Project Manager



Rick L. Moshier, P.E.  
Chief, Design Branch



Phillip M. O'Dell, P.E.  
Chief, Engineering & Construction Division

This project was designed by the U.S. Army Corps of Engineers, Seattle District. The initials and/or signatures and registration designations of individuals appearing on these project documents are within the scope of their employment as required by ER 1110-1-8152, ENGINEERING AND DESIGN PROFESSIONAL REGISTRATION.

## INDEX OF DRAWINGS

DRAWING NUMBER	SHEET NO.	PLATE NO.	TITLE	REV. NO.	DATE
			ENHANCED TRAINING IN IDAHO, MOUNTAIN HOME AFB, PHASES II & III, IDAHO (PN QYZH 98-3000)		
227s/179-90-02	1	G-1	COVER/TITLE SHEET		20AUG99
	2	G-2	GENERAL NOTES – LEGENDS ABBREVIATIONS		20AUG99
	3	G-3	VICINITY MAP		20AUG99
	4	C-1	JUNIPER BUTTE AREA		20AUG99
	5	C-2	CLOVER BUTTE AREA		20AUG99
	6	C-3	NORTHEAST AREA		20AUG99
	7	C-4	NORTH AREA		20AUG99
	8	C-5	NORTHWEST AREA		20AUG99
	9	C-6	GRASMERE AREA		20AUG99
	10	C-7	1-ACRE SITES (SE)		20AUG99
	11	C-8	1-ACRE SITES (N)		20AUG99
	12	C-9	1-ACRE SITE (SW)		20AUG99
	13	C-10	MAINTENANCE COMPLEX		20AUG99
	14	C-11	FEBA DROP SITE		20AUG99
	15	C-12	S.A.M. DROP SITE		20AUG99
	16	C-13	INDUSTRIAL COMPLEX		20AUG99
	17	C-14	ND-7 (EARLY WARNING)		20AUG99
	18	C-15	ND-4 (INDUSTRIAL #1)		20AUG99
	19	C-16	ND-5 (INDUSTRIAL #2)		20AUG99
	20	C-17	TYPICAL 0.25-ACRE SITE PLAN		20AUG99
	21	C-18	ROAD SECTION, WATER TURNOUT AND CULVERT DETAILS		20AUG99
	22	A-1	MAINTENANCE COMPLEX PLAN SCHEDULES – ELEVATIONS		20AUG99

23	A-2	MAINTENANCE COMPLEX PLAN SCHEDULES – FRAMING PLANS	20AUG99
24	A-3	DROP SITE INDUSTRIAL COMPLEX PLANS AND SCHEDULE	20AUG99
25	A-4	DROP SITE INDUSTRIAL COMPLEX ELEVATIONS	20AUG99
26	A-5	DROP SITE INDUSTRIAL COMPLEX FRAMING PLANS AND SECTIONS	20AUG99
27	A-6	CONSTRUCTION DETAILS	20AUG99
28	A-7	ONE ACRE EMITTER SITE ELEVATIONS/PLANS/SITE PLAN	20AUG99
29	A-8	NO DROP – 4 INDUSTRIAL SITE ELEVATIONS – SITE PLAN	20AUG99
30	A-9	NO DROP – 5 INDUSTRIAL SITE ELEVATIONS – SITE PLAN	20AUG99
31	E-1	ELECTRICAL ONE LINE DIAGRAM	20AUG99

#### REVISIONS TO DRAWINGS BY NOTATION

Drawing, Sheet G-3: Add note to read: “The new access roads and existing roads are identified and labeled with the type of improvements on the succeeding drawings. The limits of roadway improvements are shown on the drawings and described in the legal descriptions

Drawing, Sheet A-1: Revise Sheet Note 28 to read “Duplex Vertical Compressor (2), 5 HP.”

Drawing, Sheet A-6: Revise Detail 6 to refer to Section 00860-II for grounding of fencing.

Drawing, Sheet C-6: Revise Road AM to indicate substantial improvements.

Drawing, Sheet C-7: Delete the note “Retain all storm water on-site and provide centralized drain system.”

Drawing, Sheet C-8: Delete the note “Retain all storm water on-site and provide centralized drain system.”

Drawing, Sheet C-9: Delete the note “Retain all storm water on-site and provide centralized drain system.”

Drawing, Sheet C-10: Delete the note "Retain all storm water on-site and provide centralized drain system."

Drawing, Sheet C-12: Delete the note "Retain all storm water on-site and provide centralized drain system."

Drawing, Sheet C-13: Delete the note "Retain all storm water on-site and provide centralized drain system."

Drawing, Sheet C-14: At Grid location G-1, revise note to read "BLM style fencing." Delete the note "Retain all storm water on-site and provide centralized drain system."

Drawing, Sheet C-15: Delete the note "Retain all storm water on-site and provide centralized drain system."

Drawing, Sheet C-16: Delete the note "Retain all storm water on-site and provide centralized drain system."

Drawing, Sheet C-17: Delete the note "Retain all storm water on-site and provide centralized drain system."

Drawing, Sheet C-18: Delete the detail titled "Typical 'Some' Improvement Road Section."

#### REFERENCE DRAWINGS

Reference drawings provided show conditions at time of construction. These drawings are furnished for information only and the Government does not warrant that conditions will be exactly as shown. Minor deviations can be anticipated and shall not be the basis for a claim for extra compensation.

<u>REF. DWG. NUMBER</u>	<u>SHEET NUMBER</u>	<u>PLATE NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
1			ETI Vicinity Map	
2			Township 12 South, Range 10 East of the Boise Meridian, Idaho	16DEC98
3			Township 12 South, Range 9 East of the Boise Meridian, Idaho	16DEC98
4			Township 13 South, Range 10 East of the Boise Meridian, Idaho	16DEC98
5			Township 12 South, Range 9 East of the Boise Meridian, Idaho	16DEC98
6			Township 9 South, Range 8 East of the	3DEC98



	Boise Meridian, Idaho	
7	Township 8 South, Range 9 East of the Boise Meridian, Idaho	16DEC98
8	Township 12 South, Range 8 East of the Boise Meridian, Idaho	3DEC98
9	Township 15 South, Range 6 East of the Boise Meridian, Idaho	16DEC98
10	Township 14 South, Range 10 East of the Boise Meridian, Idaho	16DEC98
11	Township 12 South, Range 5 East of the Boise Meridian, Idaho	16DEC98
12	Township 8 South, Range 13 East of the Boise Meridian, Idaho	16DEC98
13	Township 13 South, Range 4 East of the Boise Meridian, Idaho	23NOV98
14	Township 12 South, Range 9 East of the Boise Meridian, Idaho	16DEC98
15	Township 9 South, Range 5 East of the Boise Meridian, Idaho	23NOV98
16	Township 12 South, Range 4 East of the Boise Meridian, Idaho	16DEC98
17	Township 11 South, Range 4 East of the Boise Meridian, Idaho	16DEC98

STANDARD DETAILS BOUND IN THE SPECIFICATIONS

SECTION 01501 - CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

1 & 2	U.S. Air Force Project Construction Sign	84JUN20
1	Hard Hat Sign	10SEP90

END OF SECTION

SECTION 00810 DESIGN-BUILD CONTRACT  
PROCEDURES.

SECTION 00810  
DESIGN-BUILD CONTRACT PROCEDURES  
ENHANCED TRAINING IN IDAHO (ETI)

T A B L E O F C O N T E N T S

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1.2 Pre-design Conference.....	1
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3. Part I Design Submittal Material Requirements.....	9
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## SECTION 00810

### DESIGN-BUILD CONTRACT PROCEDURES

**1. GENERAL CONTRACT PROCEDURES** The contract will be conducted in two sequences, Part I and Part II: Part I is the preparation and review of project design documents. Part II consists of construction of the facility designed in Part I. Construction is not to commence until the Government has reviewed the applicable design documents for that part of the construction. The Government reviews the Contractor's design documents for compliance with the Contract. The Contractor is totally and solely responsible for the design, coordination, compatibility, and completeness of each and every Part and compliance with contract requirements. Prior to start of each Part there will be a meeting to discuss Contractor's Quality Control Plan. See the Technical Specifications, Division 1, Section 01451 Contractor Quality Control, for details. After the design- build contract is awarded, no work can be done by the design- build Contractor on Phase III (including further design) until Phase III is authorized by Congress.

**1.2 PRE-DESIGN CONFERENCE** Within five working days after notice to proceed with the contract a pre-design conference will be held to acquaint the Contractor with the general plan of contract administration and requirements under which the design is to proceed.

#### **1.3 PART I - REQUIREMENTS**

**1.3.1 Design Submittals.** The Contractor shall prepare and distribute project design documents in accordance with the schedules provided herein. Each submittal shall be in accordance with the requirements of the contract documents and all other terms and conditions of the contract. Documents shall be submitted such that both Phase II and Phase III stand alone and are complete and useable phases.

#### **1.3.2 Design Reviews.**

(1) The Government intends to use no more than 21 calendar days for review of submittals. Design submissions found to be incomplete or not in compliance with the contract will be returned to the Contractor for correction and resubmission. Under such circumstances the Government will have an additional 14 calendar days review period, to commence upon receipt of the revised submittals, and there will be no increase in the contract completion date provided. Contract completion time (see contract clause entitled "Commencement, Prosecution, and Completion of Work") includes time for Government review of Contractor prepared project design documents. The Contractor must submit the required ETI Phase II documents in advance of the Phase III documents. The Contractor will not be authorized to submit ETI Phase III documents until ETI Phase III is authorized by Congress. The Contractor shall coordinate schedules with the Contracting Officer.

DESIGN SUBMITTAL SCHEDULE

<u>Submittal</u>	<u>Suspense</u>	<u>Submittal Items</u>
All Other Work Including Building Design (developed to 65%)	See Note 1.	Forty-two (42) copies each of One-half size drawings, specifications, and design analysis; all stamped and signed (See paragraph 2.2)
All Other Work Including Building Design (developed to 95%)	See Note 3.	Forty-two (42) copies each One-half size drawings, specifications, and design analysis; all stamped and signed (see paragraph 2.2).
Revised All Other Work Including Building Design (include Site Foundation and Utilities Design documents with this final back check submittal)	See Note 2.	Five (5) copies each one-half size drawings and specifications, and two copies design analysis and calculations; all signed and stamped. Annotated Government review comments (two copies).

NOTES: The Contractor shall complete suspense in the above schedule. Suspense is to be measured as the number of Calendar Days after Notice to Proceed (NTP) with the Contract.

1. The number of calendar days for completion shall be no later than 60 calendar days after NTP with the contract.
2. The number of calendar days for completion of the revised submittal shall include Government review time as specified in paragraph Design Reviews herein and time for the Contractor to complete required corrections and shall be no later than 14 calendar days after Contractor receipt of the Government review comments.
3. The number of calendar days for completion shall be no later than 90 calendar days after NTP with the contract.

**DESIGN REVIEW ADDRESSES AND DISTRIBUTION ARE AS FOLLOWS:**

Agency	Number of Copies		
	Draft RFP (65%)	Final RFP (95%)	Corrected Final(100%)
U.S. Army Corps of Engineers, Northwestern Division ATTN: ET-EN (Dave Keller) PO Box 2870 Portland, OR 97208-2870	1	1	1
U.S. Army Corps of Engineers, Seattle District ATTN: PM-MB (Brandt) PO Box 3755 Seattle, WA 98124-3755	12	12	3 Reproducible Hard copies and E-files
U.S. Army Corps of Engineers Spokane Area Office 1100 Wainwright Blvd., Bldg. 286 Fairchild AFB, WA 99011	2	2	
U.S. Army Corps of Engineers Mt. Home Resident Office 390 Gunfighter Ave., Bldg. 1506 Mt. Home AFB, ID 83648 Attn: Joel Rogers	2	2	
HQ ACC/CEPCW 129 Andrews Street, Rm. 326 Langley AFB, VA 23665-2769 Attn: Coleman-White	4	4	1
<u>Commander, 366 CES/CECO</u> <u>1030 Liberator Street</u> <u>Mt. Home AFB, ID 83648-5442</u> <u>Attn: Rich Hedrick</u> <del>Commander, 366 WG/DS</del> <del>366 Gunfighter Avenue, #331</del> <del>Mt. Home AFB, ID 83648-5299</del> <del>Attn: LTC Lanman</del>	20	20	
Commander 1845 EIG/ESB 4014 Hilltop Road, Ste 207 Tinker AFB, OK 73145-2713 Attn: Harry Armstrong	1	1	
Total	42	42	5

(2) Government review does not constitute approval nor acceptance of any variations from the RFP or from the Contractor's proposal unless such variations have been specifically pointed out by the Contractor in writing and authorized in writing by the Government. The

responsibility for a total design in accordance with the contract will remain with the Contractor and any interim NOTICE TO PROCEED with construction will in no way mitigate against that responsibility.

(3) The Contractor is required to respond to all review comments and submit the annotated comments in the subsequent revised design submittal. All comments must either be accepted or incorporated into the design or rebutted to the Government's written satisfaction.

(4) The Contractor shall utilize Corps of Engineers Dr Checks software for annotating and managing review comments. DrChecks is a Web-based system accessible via the Internet. Software platform for using DrChecks is a Pentium PC with Windows 95 (or above), Microsoft Internet Explorer 4.0 (or above) or Netscape Navigator (or above), and the capability to send Internet email. The Contractor shall provide this software platform for its staff requiring access to annotate or manage comments. The Contractor can review the DrChecks by accessing the Seattle District of the Corps of Engineers web site under "Construction" on the Corps home page information.

1.3.3 Design Review Conferences. Approximately 3 to 4 weeks after submission of design material for Government review a design review conference may be convened by the Government and held between the Government and the Contractor to discuss the submission and the Government's review comments. All reviews during the design/build process will be held at Mt. Home AFB, Idaho.

1.3.4 Project Design Documents. After the Contractor's final back check of the design documents, 4 sets of corrected contract drawings in electronic file format, along with one complete set of 1/2 size prints taken from the disk, shall be submitted to the Commander, U.S. Army Corps of Engineers, Seattle District, Attn.: CENWS-EN-DB-SP (Nisargand), P.O. BOX 3755, Seattle, Washington 98124-2255. The drawings shall be submitted on ISO 9660 format CD-ROM. The Contractor shall also provide the following to the Government:

- (a) Nine (9) copies each one-half size drawings
- (b) Nine (9) copies specifications.

Distribution of these design documents shall be as directed by the Government at the design review conference.

1.4 PART II - REQUIREMENTS after the Contractor has completed the applicable project design documents (see Part 1 - Requirements above) the Government will issue to the Contractor a notice to proceed with construction.

1.4.1 Preconstruction Conference. Prior to commencement of construction a Preconstruction Conference will be held to acquaint the Contractor with the general plan of contract administration and requirements under which the construction operation is to proceed. This conference will also inform the Contractor of the obligations concerning equal opportunity and Federal wage rates reporting system.



1.4.2 Contract Closeout. Completion, acceptance, and contract settlement are accomplished when final punch list items (see Section 00700 - Contract Clause Inspection of Construction) have been completed and approved, "as-built" drawings are complete, and warranty provisions and dates are established..

## **2. PREPARATION OF PART I PROJECT DESIGN DOCUMENTS**

2.1 GENERAL The Part I project design documents shall include construction drawings, specifications, and design analysis for categories such as, but not limited to architectural, fire protection/life safety, civil, structural, mechanical, electrical, grading, drainage, and utility service. Provide specifications in sufficient detail to fully describe and demonstrate the quality of materials, the installation, and performance of equipment, and the quality of workmanship. Detailing and installation of all equipment and materials shall comply with the manufacturer's recommendations. Provide a design analysis for each discipline of work with sufficient backup data including the necessary calculations, tables, methods, and sources used in determining equipment and material sizes and capacities. Design development shall conform to the criteria and requirements of Section 00860 - Statement of Work.

2.2 ARCHITECT OF RECORD All construction drawings and design calculations of the Contractor and any changes to these documents shall be affixed with the registration stamp (seal) of the Architect of Record (see) Section 01451 Contractor Quality Control, paragraph 3.4 Quality Control Organization) and that of all consultants, as appropriate, (i.e. structural, civil, mechanical, electrical, and fire protection engineers) before submittal for review. All design professionals shall have current registration to practice in the United States. Approval shall be indicated on all documents by having the professional stamp/seal of architect or engineer with personal signature over same appearing on all sheets as applicable to their specialties.

2.3 CONSTRUCTION DRAWINGS AutoCAD version 14 shall be utilized by the Contractor in preparing construction drawings. The AutoCAD electronic file format and layering shall be as specified in Section 01702, As Built Record Drawings. The project title is: ENHANCED TRAINING IN IDAHO (ETI) PHASE II AND PHASE III Mountain Home AFB, Idaho; The Project No. For Phase II is QYZH 00-3008 and the Project No. For Phase III is QYZH 01-3000. The project drawing file number for Phase II is 227s/179-90-02 and for Phase III is 227s/179-90-03, and individual drawing plates are to be identified as follows:

Title/Location/Index:	G-1		
Demolition:	D-1 and Following	Structural:	S-1 and Following
Civil:	C-1 and Following	Mechanical:	M-1 and Following
Architectural:	A-1 and Following	Electrical:	E-1 and Following

\*\*\*\*\*

**NOTE:** This is a soft metric project and all project design documents are to be prepared in metric units. The following publications are recommended as guides to aid the Contractor in the preparation of the project design documents:

**METRIC GUIDE FOR FEDERAL CONSTRUCTION**

Published by - National Institute of Building Sciences (202) 289-7800  
1201 L Street N.W.  
Washington, D.C. 20005

**MASTERMETRIC** - A Guide for Using the International System of Units (SI) in Construction Documents

Published by - AIA Master Systems - MASTERSPEC Specifications (800) 424-5080  
332 East 500 South Street  
Salt Lake City, Utah 84111-3309

\*\*\*\*\*

Construction drawings shall include all details necessary to portray the design requirements. All construction drawings shall be signed by the responsible registered professional engineer or architect. The following minimum Drawings shall be submitted:

a. Site plan(s) which accurately show existing and finish grade contours and drainage, location of pavements, layout of major utility lines, features to be retained or removed, location of all buildings, and project boundaries.

b. Typical site paving including pavement cross sections and site utilities including locations of valves, hydrants, etc.

c. Architectural floor plans which show overall dimensions, room dimensions and areas, equipment and fixtures and door swings.

d. Foundation plans showing sections and details.

e. Structural plans including framing plans, sections and details.

f. Exterior elevations which show all elevations and identify exterior materials.

g. Typical sections for each type of foundation, floor, wall, and roof construction. Include exterior walls, interior bearing walls/floors, partitions, and all other typical conditions.

h. Interior elevations which show floor, ceiling, wall materials and type of fixtures for rest rooms.

i. Interior finish schedule which shows materials and colors for wall, ceiling, and floor finishes for each room. Indicate ceiling heights.

j. Door schedule which shows type, size, material, fire rating, hardware group, and frame information.

k. Fixture and Equipment Plans showing compatibility of equipment and fixture placement.

l. Mechanical drawings shall include, in addition to layout drawings for all systems, single line diagrams of each type of piping system. Type and capacity of all mechanical equipment shall be clearly indicated including necessary schedules listing operating data.

m. Electrical, Interior: The drawings shall include all power and lighting circuits. Panels and circuits for the various pieces of equipment and lighting systems shall be properly identified and separate plans provided for power, lighting and auxiliaries. Include riser (one line) diagrams for power for auxiliaries and schedules for panels, lighting, etc. Auxiliaries to include telephone, fire alarm, public address system etc.

n. Electrical, Exterior: The drawings shall include all exterior distribution transformers, primary electrical service, underground electrical ducts, manholes and details of all new construction.

o. Equipment schedules and installation details for each special detail.

2.4 SPECIFICATIONS For the preparation of construction specifications the Contractor shall utilize the guidance provided in Section 00860 - Statement of Work and Section 00890 - Outline Specifications, and the following: Contractor is to provide specifications covering all work for Divisions 2 through 16. All specifications shall be prepared and submitted in CSI three-part format. The specifications shall require furnishing additional information such as shop or working drawings, manufacturer's literature, certificates of compliance, material samples, and guarantees necessary to assure that the work can be completed and conforms with the criteria contained in the contract and that supervision and inspection of the project can be maintained. The Division 1 Specifications (see Section 01000 - Technical Specifications) have been prepared by the Government but require the following input from the contractor:

a) Section 01330 Submittal Procedures. Complete the submittal register ENG Form 4288.

b) Section 01451 Contractor Quality Control. Review Table 1 - Minimum Sampling and Testing Frequency to assure that the materials and minimum sampling and testing frequency shown are applicable for the work being done.

2.5 DESIGN ANALYSIS Design analysis includes complete design narrative and backup calculations to support each discipline of work. The Contractor shall utilize the guidance provided in Section 00860 - Statement of Work, and the following. These analyses should include, but not be limited to, civil, structural, electrical and mechanical systems. Include computations for sizing equipment, air duct design, ventilation design, and U-factors for ceilings, roofs, and exterior walls and floors. Provide zonal cavity lighting calculations for all interior lighting and point lighting calculations for all exterior lightning. Design analyses shall be presented in a clear and legible form incorporating a title page, and a table of contents. Sources of information, formula, and references shall be explained. Assumptions and conclusions shall be explained and cross-referencing is to be clear. Design analyses shall be accomplished by Registered Professional Engineers or Architects qualified in the respective design field (see paragraph 2.2 Architect of Record).

a) When a computer program is used, the program shall be named and described. This description must be sufficient to verify the validity of methods, assumptions, theories, and formulas.

b) Spread sheet style programs are acceptable for structural analysis and design. Under a repetitive condition, at least one manual computation must be performed for each unique condition. All data, formulas and any referenced items should be clearly shown before initiation of the program. Any computer models generated for use with modeling programs should be accompanied by drawings indicating coordinate system, joint numbering and element/member numbering scheme.

## 2.6 ADDITIONAL REQUIREMENTS

a. Equipment and Fixtures. The Contractor shall furnish equipment and fixture schedules, catalog data, applicable Government or Commercial Specification numbers, and indicate sizes, capacities, manufacturer, model numbers, and manufacturer's warranties for all equipment and fixtures. Originals of catalog data (six copies only) shall be submitted in lieu of reproducible or copies to ensure legible data.

b. Additional topographic surveys and soil information, beyond that included in this RFP, desired by the Contractor shall be coordinated with and approved by the Contracting Officer. Such additional information, shall be submitted for review with the other design data. Topographic survey shall include contour lines of sufficient frequency for development of construction plans. Horizontal and vertical control shall be shown. Soil investigations shall include any boring logs, testing results, or design analysis performed. The topographic surveys were prepared specifically for the project(s) and are accurate for the time the field work was accomplished. The soil boring logs are included to provide the Contractor with information about typical soils found in the area of the EIT sites. However, these are not meant to imply that these logs are representative of subsurface condition throughout the project sites.

c. Color Board. Two sets of color boards shall be submitted as part of the 95% Bldg. Design submittal (see paragraph Design Submittals). Only if colors vary from those indicated in SECTION 00860 3.2.

For specific requirements see Technical Specification 01001 – SUPPLEMENTARY REQUIREMENTS, paragraph COLOR BOARDS.

## 3. PART I DESIGN SUBMITTAL MATERIAL REQUIREMENTS

3.1 GENERAL. Design reviews will be conducted by the Government for 65% Site Foundation, Utilities Design and All Other Work Including Building Design, and 95% All Other Work Including Building Design. Design submittal schedule and distribution requirements are given in paragraph 1.3 PART I - REQUIREMENTS. Requirements for preparation of submittal materials are found in paragraph 2. PREPARATION OF PART I PROJECT DESIGN DOCUMENTS. Submittal materials required for these design reviews are as follows.

### **3.2 SITE FOUNDATION, UTILITIES DESIGN and ALL OTHER WORK INCLUDING BUILDING DESIGN (65%) SUBMITTALS**

**a. Construction Drawings:**

1. Submittal shall include all drawings necessary to fully depict Site Foundation, Utilities Design construction requirements developed to 65%.
2. Submittal shall include all drawings necessary to fully depict All Other Work Including Building Design developed to 65% completion.

**b. Specifications:**

1. Submittal shall include completed specifications for site foundation and utilities design developed to 65%.
2. Outline specifications for all other work, including an index, general conditions and all technical sections.

**c. Design Analysis and Supporting Data:**

1. Design analysis with supporting calculation and other data as appropriate to support the 65% site foundation and utilities design.
2. Design analysis developed to the extent required to support the other design work included in this submittal.
3. Equipment and Fixture Schedules to support the design work included in this submittal.

### **3.3 (95%) ALL OTHER WORK INCLUDING BUILDING DESIGN SUBMITTALS**

**a. Construction Drawings:** All drawings upgraded to 95 % completion. Incorporate site foundation and utilities drawings into drawing package for this submittal.

**b. Specifications:** All specifications upgraded to 95% to support the completed work.

**c. Design Analysis and Supporting Data:**

1. Design analysis with supporting calculations and other data as appropriate to support the completed work.
2. Equipment and Fixture Schedules, catalog data and manufacturer's warranties for all equipment and fixtures.

**d. Color Board** showing colors, materials, textures, finishes, etc. (in accordance with paragraph 2.6 ADDITIONAL REQUIREMENTS).

**3.4 REVISED SUBMITTALS** Submit annotated Government review comments from previous submittal. All comments shall be incorporated into the design or rebutted to the satisfaction of the CO.

**END OF SECTION**

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SECTION 00860

STATEMENT OF WORK  
PART I

1. PROJECT SCOPE OF WORK

1.1 GENERAL

This project includes all design and construction necessary to provide complete and usable facilities for Phase II and Phase III of the Enhanced Training In Idaho (ETI) for Mountain Home Air Force Base, Idaho.

Phase II- Consists of the following facilities/sites

- (1) Maintenance Complex- Juniper Butte Area
- (3) Drop Sites- Juniper Butte Area; 1-FEBA(Tank Site), 1-SAM, 1-Industrial (30 acre)
- (1) No Drop Site/ Early Warning- ND7
- (4) ¼ Acre Emitter Sites; AE, AF, AG, AJ
- (3) 1 Acre Emitter Sites; BC, BE, BJ
- (1) Bird Deterrent Balls at Reservoir

Phase III- Consists of the following facilities/sites

- (10) ¼ Acre Emitter Sites; AA, AB, AC, AH, AI, AK, AM, AQ, AT, AV
- (7) 1 Acre Emitter Sites; BA, BB, BD, BF, BG, BI, BK
- (2) No Drop Sites; ND-4 Small Industrial, ND-5 Small Industrial

Phase II projects consisting of the maintenance facility complex, the FEBA site, SAM site, Industrial site (30 acre), and the Juniper Butte Fencing are to be bid as base bid items. The ¼ acre sites and one-acre emitter sites shall be bid as an optional bid item. The bird deterrent balls under Phase II shall be bid as an optional bid item. The ND-7 site shall also be bid as an optional bid item. All Phase III facilities shall be bid as another additional optional bid item.

Contractor shall submit optional cost proposal for Phase III with the understanding that the projects can not be started until notified by the Contracting Officer. Award of Phase III will be contingent upon congressional funding legislation. After the design-build contract is awarded, no work can be done by the design-build contractor on Phase III (including further design) until Phase III is authorized by Congress.

It is the Government's desire to have the Juniper Butte areas within fenced areas done early, that is all roads, SAM site, FEBA site, Industrial Complex, and Maintenance Complex. Secondary desired priority is the one acre emitter site complex BC, including related roads, parking lot and fencing.

Construction/design sequencing shall be such that both Phase II and Phase III stand alone and are complete and usable phases.

Consideration may be given to fast-track construction of certain sites, which will be coordinated with the Contracting Officer.

Construction may be authorized prior to completion of design on project segment provided that the Contracting Officer considers that design of the segment of construction to be started is sufficient to permit the construction to start. No work can be done by the design-build contractor on Phase III, including further design, until Phase III is authorized by Congress.

Contractor shall schedule a joint condition survey between May 1, 2000 and May 15, 2000. Participants are to include the Native American, BLM, and other interested parties. Construction activity for the respective sites shall be restricted as outlined in the mitigation plan.

Specified turnaround areas, staging and stockpile location shall be in previously disturbed areas with non-native vegetation. Intact native vegetation areas shall not be disturbed without Contracting Officer approval. Contractor shall minimize disturbances to sites and shall seed all areas that are disturbed.

Site development includes utility services, gravel access roads and parking areas, seeding of disturbed areas, and all other site improvements as described herein. The work includes all utility systems, HVAC systems, fire protection system and electrical systems. The project also includes demolition of fence and gates at site BK (Phase III). The geotechnical report herein attached only includes sites within the Juniper Butte area. Criteria for other sites have been assumed from this report and actual site condition may vary from the report. There are no geotechnical reports on the one (1) acre sites. Determination of existing site conditions, site surveys, geotechnical investigations, and all other information prerequisite for design and construction of a complete and usable facility and not contained in this Request for Proposal (RFP) are the express responsibility of the Contractor.

NOTE: Wherever the term "Proposer" is used it shall be read as "Contractor" following contract award.

## 1.2 PROJECT LOCATION AND SITE PLAN

Mountain Home AFB is located 90 kilometers (56 miles) southeast of Boise, Idaho and 14.5 km (nine miles) southwest of Mountain Home, Idaho. The construction projects are within areas of Southern Idaho, commonly referred to as the Owyhee Desert. The land is owned by the U.S. Government and the State of Idaho. Reference the drawings for specific locations of the sites.

The construction of the projects are in areas of Southern Idaho within which are numerous culturally significant areas. All Contractor personnel shall be required to undergo an Air Force training session to familiarize themselves with the existence of such resources, as disturbances can result in significant fines and penalties. Restrictions are also placed upon unexpected archaeological finds, prehistoric occupation debris and human skeletal remains. The Contractor shall avoid any disturbance of sage grouse and minimize any impact to grouse habitat. Destruction of sagebrush and slick spotted peppergrass in habitat areas shall be minimized and construction activities limited. Contractor shall notify Contracting Officer of any findings. Contractor shall specifically reference Division I specification sections.



## 2. CODES AND STANDARDS

### 2.1 GENERAL

2.1.1 The project shall be designed and constructed in accordance with the applicable codes, standards, design parameters and regulations as noted in this section or other sections of this RFP. In case of conflict between these requirements the most stringent requirement shall apply.

2.1.2 Reference to standard specifications of any technical society, organization, or association, or to codes, manuals, or regulations of Federal, State, or local authorities shall mean the latest standard, code, manual, regulation, specification, or tentative specification adopted and published at least 90 days prior to submittal of proposals, unless specifically stated otherwise.

2.1.3 When any code or standard listed below references the authority having "jurisdiction" or "governmental authority" this reference shall be interpreted as referring to the Contracting Officer (CO).

2.1.4 Throughout this RFP reference is made to the Mountain Home AFB Architectural Compatibility and Engineering Standards document. This manual presents the Base's design philosophy and provides the framework within which this RFP was prepared. The manual is available in electronic format from the CENWS internet home page (<http://www.nws.usace.army.mil>).

### 2.2 BASIC REQUIREMENTS

2.2.1 General: Construction shall be in accordance with the following codes, standards, and regulations. The most stringent shall govern when discrepancies occur.

- (1) Building Code: Uniform Building Code (UBC), latest Edition.
- (2) Mechanical Code: Uniform Mechanical Code (UMC), latest Edition.
- (3) Plumbing Code: ~~National Standard Plumbing Code (NSPC)~~ [Uniform Plumbing Code \(UPC\)](#), latest Edition.
- (4) Electrical Codes: National Electrical Code, 1997 Edition. National Electrical Safety Code, 1997 Edition.
- (5) National Fire Protection Association Fire Codes (NFPA), latest Editions.
- (6) Life Safety Code: National Fire Protection Association, NFPA 101.
- (7) MIL-HDBK-1008C, Fire Protection for Facilities. Requirements of this handbook shall govern over other standards for protection and life safety.
- (8) Uniform Federal Accessibility Standards (UFAS-49FR 31528).
- (9) Americans With Disabilities Act (ADA)-(Not applicable to the projects)

2.2.2 Structural: Structural design shall comply with the requirements of the latest editions of the following codes, standards, and specifications.

- (1) Uniform Building Code (UBC)
- (2) American Concrete Institute (ACI), "ACI-318, Building Code Requirements for Reinforced Concrete."
- (3) American Institute of Steel Construction (AISC), "Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings."
- (4) American Iron and Steel Institute (AISI), "Specifications for the Design of Cold-Formed Steel Structural Members."
- (5) American Society of Civil Engineers (ASCE), "Minimum Design Codes for Buildings and Other Structures" (Formerly ANSI A58.1)
- (6) American National Standards Institute (ANSI), "American Standard Building Code Requirements for Reinforced Masonry."
- (7) American Welding Society (AWS), "Structural Welding Code."
- (8) American Society for Testing and Materials (ASTM) as noted.
- (9) Crane Manufacturers Association of America (CMAA).
- (10) Metal Building Manufacturers Association (MBMA), "Low Rise Building System Manual."
- (11) Steel Joist Institute (SJI), "Standard Specifications Load Tables and Weight Tables for Steel Joists and Joist Girders; Open Web Steel Joists, Longspan and Deep Longspan Steel Joists," and similar publications covering steel joists.
- (12) See Paragraph 3.3 STRUCTURAL REQUIREMENTS for specific structural design requirements including Seismic Zone information.

2.2.3 Architectural:

- (1) Architectural design shall conform to the guidance furnished in this RFP and shall be in general accordance with the design of the guidance provided in the MHAFB Architectural Compatibility and Engineering Standards Manual.
- (2) The choice of exterior colors, finishes and materials for this facility to be in agreement with the guidance furnished herein.
- (3) Life Safety design shall be in accordance with NFPA 101 Code for Safety to Life from Fire in Buildings and Structures, MIL-HDBK-1008C and the guidance furnished herein.
- (4) Bollards shall be installed at all overhead doors to protect the building and the doorframe from vehicular damage. Bollards shall be designed as shown in the bollard detail.

- (5) Because of the nature of the work and maintenance support required at the one-acre emitter sites, facilities there are not designed as barrier free buildings. The maintenance building shall have access ramps and a handicapped toilet area.

#### 2.2.4 Mechanical:

All mechanical equipment provided and furnished shall be installed so that it is easily accessible for maintenance and repair or replacement, and shall be in compliance with local codes and ordinances, the Uniform Mechanical Code (UMC), the Uniform Plumbing Code (UPC), and the applicable codes and standards of the National Fire Protection Association (NFPA) and Underwriters Laboratories (UL), and the criteria and requirements specified in this RFP.

#### 2.2.5 Electrical:

Electrical wiring shall comply with the current regulations of the National Electrical Safety Code, National Electrical Code, National Fire Protection Association Life Safety Code, and the criteria and requirements specified in this RFP. Equipment shall conform to the requirements of the Institute of Electrical and Electronics Engineers, American Standards Association, National Electrical Manufacturers Association and Underwriters Laboratories, Inc.

#### 2.2.6 Fire Protection/Detection:

Fire protection shall be provided at the maintenance facility by means of an above ground water storage tank. A fire sprinkler system with local alarm shall be installed in the maintenance building.

#### 2.2.7 Pavements:

Design criteria for roads and parking design shall be in accordance with the criteria specified in the attached Geotechnical Report and paragraph 3.1 CIVIL DESIGN REQUIREMENTS, (6) Roadways.

### 2.3 TECHNICAL ORGANIZATIONS AND REGULATORY AGENCIES

Throughout the RFP, certain acronyms and/or abbreviations are used to refer to various technical and regulatory organizations. The following acronyms and abbreviations are defined to mean the listed organization, and are provided for the Contractor's convenience. Both names and addresses are subject to change and are believed, but not guaranteed, to be up-to-date as of the date of this RFP. Where no other standard or specification is provided, the standards of these organizations apply to this contract unless otherwise specified.

AA	Aluminum Association 900 19 <sup>th</sup> St., NW, Suite 300 Washington, DC 20006	(202) 862-5100
AABC	Associated Air Balance Council 1518 K St., NW Washington, DC 20005	(202) 737-0202
AASHTO	American Association of State Highway and Transportation Officials	

	444 North Capitol St., Ste. 249 Washington, D.C. 20001	(202)-624-5800
ACI	American Concrete Institute Box 9094, Redford Street Farmington Hills, Michigan 48333	(810) 848-3801
	Publ. "Building Code Requirements For Reinforced Concrete"	
ACIL	American Council of Independent Laboratories 1629K. Street NW Washington, DC 20006	(202) 887 -5872
ACPA	American Concrete Pipe Assoc. 8300 Boone Blvd., Suite 400 Vienna, VA 22182	(703) 821-1990
ADC	Air Diffusion Council One Illinois Center, Suite 200 111 East Wacker Dr. Chicago, IL 60601-4298	(312) 616-0800
AGA	American Gas Assoc. 1515 Wilson Blvd. Arlington, VA 22209	(703) 841-8400
AI	Asphalt Institute Research Park Dr. P.O. Box 14052 Lexington, KY 40512-4052	(606) 288-4960
AIA	American Institute of Architects 1735 New York Avenue, NW Washington, DC 20006	(202) 626-7300
AISC	American Institute of Steel Construction One East Wacker Dr., Ste 3100 Chicago, IL 60601	(312) 670-2400
	Publ. "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings"publ. "Code of Standard Practice for Steel Buildings and Bridges."	
AISI	American Iron and Steel Institute 1133 15th St., NW Washington, DC 20036	(202) 452-7100
AMCA	Air Movement and Control Association 30 W. University Dr. Arl. Heights., IL 60004-1893	(708) 394-0150

ANSI	American National Standards Institute 11 West 42 <sup>nd</sup> St., 13 <sup>th</sup> Floor New York, NY 10036	(212) 642-4900 Fax (212) 398-0023
APA	American Plywood Assoc., P.O. Box 11700 Tacoma, WA 98411	(206) 565-6600
ARI	Air-Conditioning and Refrigeration Institute 4301 Fairfax Dr. Arlington, VA 22203	(703) 524-8800
ASC	Adhesive and Sealant Council 1627 K St., NW, Suite 1000 Washington , DC 20006-1707	(202) 452-1500
ASHRAE Engineers	American Society of Heating, Refrigerating and Air-Conditioning 1791 Tullie Circle, NE Atlanta, GA 30329-2305	(404) 636-8400
ASME	American Society of Mechanical Engineers 345 East 47th Street New York, NY 10017	(212) 705-7722
ASSE	American Society of Sanitary Engineering 28901 Clemens Road Westlake, OH 44145	(216)-835-3040
ASTM	American Society for Testing and Materials 1916 Race St. Philadelphia, PA 19103-1187	(215)-299-5400
AWPI	American Wood Preservers Association P.O. Box 286 Woodstock, MD 21163-0286	(410) 465-3169
AWS	American Welding Society 550 LeJeune Road, NW P.O. Box 351040 Miami, FL 33135	(305) 443-9353
AWWA	American Water Works Association 6666 W. Quincy Avenue Denver, CO 80235	(303) 794-7711
BHMA	Builder's Hardware Manufacturers Association 355 Lexington Ave., 17 <sup>th</sup> Floor New York, NY 10017	(212) 661-4261

CISP	Cast Iron Soil Pipe Institute 5959 Shallowford Rd., Ste. 419 Chattanooga, TN 37421	(615) 892-0137
COE	Corps of Engineers (U.S. Dept. of the Army) Washington, D.C. 20315	
CMAA	Crane Mfrs. Assn. Of America 8720 Red Oak Blvd., 201 Charlotte, NC 28217	(704) 676-1190 FAX (704) 676-1199
CRSI	Concrete Reinforcing Steel Institute 933 N. Plum Grove Road Schaumburg IL 60173	(708)517-1200 FAX (708)517-1206
CTI	Ceramic Tile Institute of America	
DHI	Door and Hardware Institute 14170 Newbrook Drive Chantilly, VA 20151-2232	(703)-222-2010 FAX (703)-222-2410
DIPRA DUCTILE IRON PIPE RESEARCH ASSOCIATION	245 Riverchase Parkway East, Suite O Birmingham, Alabama 35244	(205)988-9870 FAX (205)988-9822
EIA	Electronic Industries Association 2500 Wilson Boulevard Arlington, Virginia 22201-3834	
EJMA	Expansion Joint Manufacturers Association	
FGMA	Flat Glass Marketing Assoc. 3310 SW Harrison St., Topeka, KS 66611-2279	
FM	Factory Mutual Engineering Corp. 1151 Boston-Providence Turnpike P.O. Box 9102 Norwood MA 02062-9102	(617) 762-4300 FAX (617) 762-9375
GA	Gypsum Association 810 First St. N.E., # 510 Washington DC 20002	(202) 289-5440 FAX (202) 289-3707
ICEA	Insulated Cable Engineers Association, Inc. P.O. Box P South Yarmouth, MA 02664	(508)394-4424
IES	Illuminating Engineering Society 345 E. 47th Street	

New York, NY 10017 (212)-644-7926

Publ. Lighting Handbook

IEEE The Institute of Electrical and Electronics Engineers, Inc.  
345 East 47th Street (212) 705-7900  
New York, NY 10017 (800) 678-IEEE (4333)

IGCC Insulating Glass Certification Council c/o ETL Testing Labs., Inc.

IPCEA Insulated Power Cable Engineers Association  
PO Box 440 (508) 394-4424  
South Yarmouth, MA 02664 FAX (508) 394-1194

KCMA Kitchen Cabinet Manufacturers Association  
1899 Preston White Dr.  
Reston, VA 22091-4326 (212) 264-1690

LPI Lightning Protection Institute  
3365 N. Arl. Hgts. Rd., Ste. J  
Arlington Heights, IL 60004 (800) 488-6864

MBMA Metal Building Manufacturers Association Inc.  
1300 Sumner Ave  
Cleveland, OH 44115-2851 (216) 241-7333

MCAA Mechanical Contractors Association of America  
Rockville, MD (301) 869-5800

MSS Manufacturers Standardization Society of the Valve and Fittings Industry  
127 Park St., NE  
Vienna, VA 22180 (703) 281-6613

MHI Material Handling Institute  
8720 Red Oak Blvd. STE 210  
Charlotte, NC 28217 (704) 705-7693

NAAMM The National Association of Architectural Metal Manufacturers  
221 N. LaSalle Street  
Chicago, IL 60601 (312) 332-0405

NAIMA North American Insulation Manufacturers Association  
44 Canal Center Plaza, Ste. 310  
Alexandria, VA 22314 (703) 684-0084

NAPA National Asphalt Pavement Association  
5100 Forbes Blvd.  
Lanham, MD 20706-4413 (301) 731-4748

NAPHCC	National Association of Plumbing - Heating - Cooling Contractors P.O. Box 6808 Falls Church, VA 22046	(703) 237-8100
NBS	National Bureau of Standards (U.S. Dept. of Commerce) Gaithersburg, MD 20234	(301) 975-2000
NCMA	National Concrete Masonry Association P.O. Box 781 Herndon, VA 22070	(703) 435-1900
	publ. "Specification for the Design and Construction of Load-bearing Concrete Masonry"	
NEC	National Electric Code (by NFPA)	
NECA	National Electric Contractors Association 7315 Wisconsin Avenue Washington, DC 20014	(202)-657-3110
NEMA	National Electrical Mfg. Association 2101 L. Street, NW Washington, DC 20037	(202) 457-8400
NESC	National Electrical Safety Code	
NFPA	National Fire Protection Association Battery March Park Quincy, MA 02269-9101	(617) 770-3000
NPCA	National Paint and Coatings Association 1500 Rhode Island Ave., NW Washington, DC 20005	(202) 462-6272
NRCA	National Roofing Contractors Association 10255 W. Higgins Rd., Ste. 600 Rosemont, IL 60018-5607	(708) 299-9070
NSF	National Sanitation Foundation 3475 Plymouth Rd. P.O. Box 130140 Ann Arbor, MI 48113-0140	(313) 769-8010
OSHA	Occupational Safety Health Administration (U. S. Dept. of Labor) Government Printing Office Washington, DC 20402	



PCA	Portland Cement Association 5420 Old Orchard Road Skokie, Illinois 60077	(708) 966-6200
	publ. "Slab Thickness Design for Industrial Concrete Floors on Grade"	
RCRBS	Research Council on Riveted and Bolted Structural Joints,	
	publ. "Specification for Structural Joints using ASTM A325 or A490 Bolts"	
RFCI	Resilient Floor Covering Institute 966 Hungerford DR., Suite 12-B Rockville, MD 20805	(301) 340-8580
SDI	Steel Deck Institute P.O. Box 9506 Canton, OH 44711	(216) 493-7886
S.D.I	Steel Door Institute 712 Lakewood Cnt. N. Cleveland, OH 44107	(216)-226-7700
SIGMA	Sealed Insulating Glass Manufacturers Association 401 N. Michigan Ave. Chicago, IL 60611	(312) 644-6610
SJI	Steel Joist institute 1703 Parham Road Richmond, VA 23229	(804)-288-3071
	publ. "Standard Specifications and Load Tables, Open Web Steel Joists and Long Span Joists" publ. "Recommended Code of Standard Practice for Steel Joists" publ. "Steel Roof Deck Design Manual"	
SMACNA	Sheet Metal & Air Conditioning Contractors National Association 8224 Old Courthouse Road Vienna, VA 22180	(703)-790-9890
SSPC	Steel Structures Painting Council 4400 5th Avenue Pittsburg, PA 15213 -2683	(412) 578-3327
TCA	Tile Council of America P.O. Box 326 Princeton, NJ 08542-0326	(609) 921-7050
TPI	Truss Plate Institute 2400 E. Devon Avenue Des Plaines, IL 60062	(312) 625-7700

UBC	Uniform Building Code International Conference of Building Officials 5270 South Workman Mill Road Whittier, CA 90601	
UL	Underwriters Laboratories 333 Pfingsten Road Northbrook, IL 60062	(312) 272-8800
WCLIB	West Coast Lumber Inspection Bureau O. Box 23145 Portland, OR 97223	(503) 639-0651
WWPA	Western Wood Products Association Yeon Building 522 SW 5 <sup>th</sup> Ave. Portland, OR 97204-2122	(503) 224-3930
W.W.P.A.	Woven Wire Products Association 2515 N. Nordica Ave. Chicago, IL 60635	(312) 637-1359

## 2.4 FEDERAL GOVERNMENT AGENCIES

Names and titles of Federal Government Standard or Specification producing agencies are often abbreviated. The following acronyms or abbreviations referenced in the Contract Documents indicate names of Standard or Specification producing agencies of the Federal Government. Names and addresses are subject to change and are believed, but are not assured, to be accurate and up-to-date as of the date of the Contract Documents.

BLM	Bureau Of Land Management District Manager Boise Field Office 3948 Development Ave. Boise, ID 83705-5389	
COE	Corps of Engineers, Seattle District (U.S. Department of the Army) P.O. Box 3755 Seattle, WA 98124-3755	(206) 764-6575
CFR	Code of Federal Regulations (Available from the Government Printing Office) N. Capitol St. between G and H St. NW Washington, DC 20402 (Material is usually first published in the "Federal Register")	(202) 783-3238
CPS	Consumer Product Safety Commission 5401 Westbard Ave.	

CS	Bethesda, MD 20207 Commercial Standard (U.S. Department of Commerce) Government Printing Office Washington, DC 20402	(800) 638-2772    (202) 783-3238
DOC	Department of Commerce 14th St. and Constitution Ave., NW Washington, DC 20230	  (202) 482-2000
DOT	Department of Transportation 400 Seventh St., SW Washington, DC 20590	  (202) 366-4000
EPA	Environmental Protection Agency 401 M St., SW Washington, DC 20460	  (202) 382-2090
FAA	Federal Aviation Administration (U.S. Department of Transportation) 800 Independence Ave., SW Washington, DC 80460	   (202) 366-4000
FCC	Federal Communications Commission 1919 M St., NW Washington, DC 20554	  (202) 632-7000
FHA	Federal Highway Administration 610 East 5 <sup>th</sup> Street Vancouver, WA 98661-3893	  (360) 696-7520
FS	Federal Specification (from GSA) Specifications Unit (WFSIS) 7th and D St., SW Washington, DC 20407	   (202) 708-9205
GSA	General Services Administration F St. and 18th St., NW Washington, DC 20405	  (202) 708-5082
MIL	Military Standardization Documents (U.S. Department of Defense) Naval Publications and Forms Center 5801 Tabor Ave. Philadelphia, PA 19120	
NOAA	National Oceanographic and Atmospheric Association 1315 East-West Hwy, 2nd Floor SSMC-3 E/OCA Silver Spring, MD 20910	   (301) 713-2600

99065/cs  
Enhanced Training in Idaho (ETI), Mt. Home AFB

OSHA	Occupational Safety and Health Administration (U.S. Department of Labor) 200 Constitution Ave., NW Washington, DC 20210	(202) 219-6091
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PS	Product Standard of NBS (U.S. Department of Commerce) Government Printing Office Washington, DC 20402	(202) 783-3238
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USPS	U.S. Postal Service 475 L'Enfant Plaza, SW Washington, DC 20260-0010	(202) 268-2000
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END OF SECTION

## SECTION 00860

### STATEMENT OF WORK PART II

#### 3. DESIGN DEVELOPMENT TECHNICAL REQUIREMENTS

##### 3.1 CIVIL DESIGN REQUIREMENTS

3.1.1 Civil design and construction shall be in accordance with the requirements stated herein, the Geotechnical Report, and the applicable requirements of paragraph 2. CODES AND STANDARDS and other requirements as stated herein.

##### 3.1.2 Site Planning:

(1) General. A Vicinity Map of the entire training range is shown on Drawing G-3. Area Maps are shown on Drawings C-1 to C-6. Site specific site plans are shown on Drawings C-7 to C-17. The project involves the design of a training range for use by aircraft stationed at Mountain Home Air Force Base, Idaho, and occasionally by aircraft stationed at other bases. The range is located in southwest Idaho in an area referred to as the Owyhee Desert. The major components of the project are a 12,000 acre drop site with maintenance support facility, several no-drop sites, and a number of emitter sites. These sites are indicated on the site map by the letters "ND" for no-drop sites, "A" for ¼ acre emitter sites, and "B" for 1 acre emitter sites.

The drawings demonstrate the general design features and include vicinity maps, area maps and site specific plans. The location of the proposed sites and access roads shown on the drawings were derived from legal descriptions and GPS information provided by the Bureau of Land Management, Corps of Engineers and the Air Force. The accuracy of the information has not been field verified. The information provided was based on NAD83 coordinate system and has been converted to the NAD27 coordinate system in an effort to match the quadrangle base map data. The purpose of the drawings is to display the Corps of Engineers' and the Air Force's intent of the project only. The Contractor shall use the approved legal descriptions, plats, and GPS information for field locating the proposed sites and access roads.

Since most of the sites are on land controlled by the Bureau of Land Management, the main objective of Civil Design is to minimize the impact on land forms and native vegetation. This will be accomplished by blending the roads and individual sites with the surrounding landscape, with a minimum amount of earthwork and ground disturbance.

It is essential that the contractor limit the disturbance within the ROW's to an absolute minimum and to only use the specific road width area. The specific area will be subject to scrutiny on this issue.

Contractor is to conduct a pre-condition inspection of Three Creek Road and the SD Road, and after the construction is completed the area is to be restored to its original condition.

The sites are characterized by rolling hills and buttes. The upland, arid climate allows mostly low growing forbs, grasses, and shrubs. Perennial and intermittent streams cut through the area in places, allowing taller, denser vegetation typical of these riparian zones.

(2) Site Plan. The site plans shown are not a definitive site design solution. The Design/Build Contractor is to develop site design solutions while meeting the criteria stated herein. Innovative, creative, and/or cost saving proposals that fulfill these criteria are encouraged and will be evaluated accordingly.

### 3.1.3 Site Design:

(1) General Site Requirements. Overall site design shall conform to the guidance provided herein.

(a) Compliance with the Corps of Engineers Guide Specifications (CEGS) and the Geotechnical Report of Appendix C is mandatory.

(b) The Contractor shall confine all proposed development within the right-of-way and site boundary described in the approved legal descriptions, plats, and GPS information and as generally shown on the attached drawings. Under no circumstances shall the Contractor contemplate any work outside these limits except as authorized in the RFP or in writing by the Contracting Officer (CO). Required utility connections are an exception to this requirement. The Design/Build Contractor shall minimize the impact on land forms and native vegetation. This should be accomplished by blending the roads and individual sites with the surrounding landscape, with a minimum amount of earthwork and ground disturbances.

(c) The sites for the targeting range, emitters, no-drop, and maintenance facilities will all require some combination of site grading, drainage facilities, and gravel parking areas.

(d) The largest turning radius on the site shall be determined by a standard 18-wheel tractor-trailer.

#### (2) Storm Drainage/ Grading

(a) The main objective is to minimize the impact on land forms and native vegetation.

(b) Earthwork shall conform to Section 00890, Outline Specifications and the guidance provided in the Geotechnical Report, with the exceptions noted.

The construction limits (ground disturbance) shall be limited to 12.2m (40 feet) within the right-of-way corridor for construction of light-duty and medium-duty access roads. The horizontal roadway alignment may meander within the right-of-way corridor to avoid rock or sensitive areas. Rock excavation shall be minimized to the extent possible. The vertical roadway alignment may follow the natural topography to avoid shallow bedrock.

Construction limits for the ¼-acre emitter sites shall be limited to the approved right-of-way and site boundary. The finished gravel pad shall be approximately 55-58 feet radius with approximately 18-inch bermed material

extending to 60 feet radius. The bermed material may be topsoil from the site. This may require use of smaller equipment.

The ND-4 (Industrial #1) site contains known sage grouse habitat consisting of large sagebrush bedding grounds. Habitat areas shall be avoided and construction times will be limited. The final location of the buildings will be reviewed accordingly. No work shall occur southeast of the existing jeep trail except for installing the perimeter fence.

Construction limits for all other sites shall be limited to the approved right-of-way and site boundaries. Within the site boundaries of Sites ND-4, ND-5, and ND-7, disturbance of natural cover, particularly sage brush, shall be minimized to the extent possible.

The D/B Contractor shall incorporate one or more of the following construction techniques during construction of roadways to reduce native vegetation disturbances: 1) topsoil from roadways may be stockpiled approximately every 1/4-mile within the right-of-way corridor, 2) obtain borrow from one side of the road and cross slope in one direction, and 3) temporarily stockpile topsoil in the constructed borrow ditches. All stockpile locations shall be approved by the Corps of Engineers.

(c) Cut and fill material shall be balanced within each site as much as possible to eliminate importing and exporting material. Organic topsoil shall not be used for structural fill but may be used for landscaping, berm construction, and general site grading. If berming of material is required at the Maintenance Complex, it shall be outside the fenced area to maximize use of the fenced maintenance complex area.

(d) Minimum grades of 2% shall be used to direct runoff away from all structures. Parking and walkways should be sloped such that runoff is directed to a centralized drainage system.

(e) The difference between pre-development runoff and post-development runoff shall be retained on each project site and collected in a disposal facility. Runoff from each site, as well as runoff entering the site from adjacent properties, should be considered in the storm drainage calculations.

(f) Storm drainage calculations and discharge volume, including runoff from adjacent properties, shall be based on a 10-year return period using an intensity-duration-frequency curve for the Owyhee Desert area. In determining the intensity, the appropriate storm duration to be used for any watershed is equal to the time of concentration. Time of concentration is a function of the watershed length and the average slope.

(g) Peak rate of runoff with a particular precipitation event should be calculated in sizing hydraulic structures, such as culverts. Several methods are available for predicting peak flows; 1) The Rational Formula ( $Q=CIA$ ) is suitable for use in small basins of less than 200 acres, 2) the Soil Conservation Service TR-55 Method, as outlined in "Technical Release No. 55", is suitable for

small to medium basins up to 2000 acres, and 3) computer programs such as HEC and TR-20 are computer programs suitable for larger basins and flood plain evacuations.

- (h) The total volume of runoff produced by a given storm event should be calculated in order to size a disposal facility, such as a retention basin or dry well. It may be assumed a given percentage of the total volume of precipitation will be runoff, based on the land use.
- (i) Stormwater disposal by percolation is dependent upon groundwater location and soil permeability. A percolation system, such as a dry well consisting of an inlet to a large pit or lined trench filled with large cobble rock, should be considered after careful analysis of site specific conditions. The dry well should be covered with native soil and seeded with approved seed. If the dry well is located in a traffic area, the depth of native cover shall be according to the pipe manufacturer's recommendations.
- (j) Stormwater disposal by evaporation may be accomplished by using on-site retention basins, swales, or borrow ditches. Gradual grading and reseeded can create on-site retention features that only become noticeable during runoff events.
- (k) Runoff from roadways will likely be retained with borrow ditches.

(3) Potable Water Distribution

- (a) The Contractor shall develop the potable drinking water system consisting of a water storage reservoir and distribution system at the Maintenance Complex in accordance with the requirements given herein. The potable water system shall be separate from the fire protection system.
- (b) The potable drinking water system shall be designed and constructed in accordance with the Idaho Rules for Public Water Systems, local standards and codes. The water storage reservoir shall be designed and constructed in accordance with AWWA Standards Section D. All water pipe and the storage reservoir shall be disinfected in accordance with AWWA standards.
- (c) The facility pressure shall be a minimum of 1.4 kg per square cm (20 psi) and a maximum of 5.25 kg per square cm (75 psi) at each outlet after allowing for friction and other losses. The minimum flow requirement is 70 lpm (18 gpm).
- (d) All pipe, fittings, valves and fire hydrants shall conform to the latest standards issued by the AWWA and NSF.
- (e) All pipe joints for plugs, caps, tees, bends, and hydrant laterals shall be mechanically restrained to prevent separation.
- (f) Water mains and non-potable water lines shall be separated by 3.0 meters (10 feet) horizontal separation, and 46 cm (18 inches) vertical separation, at



outside of walls. If water lines and sewer lines cross, one full, uncut length of water pipe (20 feet) shall be centered over the crossing so that the joints are as far as possible from the non-potable water line. Separation closer than those stated above shall be constructed according to ISPWC Standard Drawings SD-407.

- (g) The minimum cover of material over all water pipes shall be as specified in the Geotechnical Report (Appendix C).
  - (h) The water storage reservoir shall consist of a 22,710-Liter (6,000-gallon) insulated steel tank to provide adequate water supply for 100 days, assuming 3 people each use up to 76 Liters (20 gallons) per day. The insulation shall consist of closed cell urethane (minimum R-value 10) with aluminum protective covering painted Desert Beige. The water reservoir shall have provisions for overhead fill and level indicator. A tank-type hot water heater shall be installed with the appropriate circulation pump system to maintain tank temperature and prohibit freezing water during winter months. Refer to Section 00860 Mechanical Requirements and Section 00890 Division 15-Mechanical.
  - (i) The potable drinking water system requires a booster pump station located at the reservoir to provide adequate pressure and flow to a second booster pump and pressure tank located within the building. The second booster pump and pressure tank is specified under Division 15, Mechanical. The booster pump shall be designed to provide the second booster pump with the required flow and suction head requirements.
  - (j) All potable water components shall be insulated and designed with measures to prevent freezing.
- (4) Fire Protection System
- (a) The Contractor shall develop a fire protection system consisting of a water reservoir, booster pumps, and fire hose connection and a building fire sprinkler system at the Maintenance Complex. The building fire sprinkler system is specified under Division 15, Mechanical. The fire protection system shall be separate from the potable water system.
  - (b) The system design shall provide a minimum residual pressure of 1.4 kg per square cm (20 psi) at the fire hose connection and minimum flow of 3,785 lpm (1,000 gpm).
  - (c) All water pipe shall meet AWWA standards. The minimum size of water mains shall be 150mm (6-inch). Larger size water main will be required if necessary to meet the minimum residual pressure requirements.
  - (d) One fire hose connection shall be provided at the pump house within the Maintenance Complex.

- (e) The water reservoir shall conform to AWWA and NFPA standards, shall be ground mounted, and shall have a minimum height of 9.1m (30 feet) and radius of 3.0m (10 feet). The water reservoir shall consist of insulated steel tank. The insulation shall be closed-cell urethane (minimum R-value 10) with aluminum protective covering painted Desert Beige. ~~The bottom of the water reservoir shall be 15 feet above ground level to allow fire truck filling.~~ The gravity distribution shall consist of two each 2½-inch standard thread connections and overhead fill.
- (f) Water reservoir accessories shall include an overhead fill, overflow, locking access manhole and ladder, vents with bird screens, and water level indicator. All accessories shall be insulated and design against freezing.
- (g) The water reservoir shall be placed near the access road to facilitate water delivery and distribution by water trucks as shown on the drawings. A gravel turn around area shall be provided for water trucks.
- (h) Tank type hot water heaters shall be installed with the appropriate circulation pump system to maintain tank temperature and prohibit freezing water during winter months in accordance with NFPA Standard 20. Refer to Section 00860 Mechanical Requirements and Section 00890 Division 15-Mechanical.
- (i) Two main fire pumps shall be installed each with capacity for delivery of 3,785 lpm (1,000 gpm) at 46 meters (150 feet) total dynamic head. Each pump shall be driven by a separate 60 horsepower electric motor.
- (j) A one-acre reservoir pond to be designed and built by others, to contain a minimum of 50,000 gallons, will be located near the southwest corner of the Juniper Butte Drop Site for joint use by the Air Force as a source of water for fire fighting purposes. The D/B Contractor shall design the entire distribution system including but not limited to the reservoir pond, intake system, filtration, piping, valves, and appurtenances. The D/B Contractor shall provide the Contracting Officer with the design of the pond and the intake system, filtration system, valves, and 30 m (100 feet) of 305 mm (12-inch) water pipe materials at the pond for others to install. The D/B Contractor shall furnish and install approximately 884 m (2900 feet) of 305 mm (12-inch) water pipe material from the pond to the Clover Three Creek Road. A valve and dry fire hydrant (to be used to fill fire-fighting trucks) with two 64 mm (2½-inch) standard thread connections shall be provided near the road. The D/B Contractor shall also provide and install bird deterrent balls (fowl balls) to cover approximately a one-acre surface area of the reservoir pond. The bird deterrent balls shall be an optional bid item. Four manufacturers of the bird deterrent balls are:
  - 1) Wildlife Control Tech, Fresno, CA (800) 235-0262
  - 2) Intermountain Piping Systems, Salt Lake City, UT (801) 298-9696
  - 3) Coastal Netting, Bakersville, CA (800) 726-3354
  - 4) Euro-matic Ltd., Leominster, MA (800) 537-8274

(5) Sanitary Sewer

- (a) The Contractor shall provide a sanitary sewer system at each one-acre emitter site and the maintenance complex. The system shall consist of a septic tank and drain field in accordance with the Technical Guidance Manual published by the State of Idaho Department of Health and Welfare. The Contractor shall obtain the permits required for all septic systems from the State of Idaho, Department of Health and Welfare and forward copies to the Contracting Officer and 366BCE MHAFFB. For loading, assume an average of five persons, and a maximum of ten persons, staying for two to three days per visit for 16 visits per year.
- (b) The sanitary sewer design, construction, and leakage testing shall conform to the National Standard Plumbing Code published by NAPHCC. All pipe materials and joints shall conform to the applicable ASTM, ANSI or other Standard as appropriate.
- (c) The sewer pipe should be installed level with an allowable variation of not more than 13 mm per 30.5 meters (½ inch per 100 feet) and shall have a minimum cover of material over all water pipes as specified in the Geotechnical Report (Appendix C).
- (d) The minimum size septic tank for the one-acre emitter sites shall be 2840 Liters (750 gallons), the minimum capacity allowed by the State of Idaho. The minimum size septic tank for the Maintenance Complex should be 11,360 liters (3,000 gallons). The Southwest District Health Department will determine the size of drain field and soil application rate, after a site-specific analysis of subsurface soil conditions.
- (e) An approved septic tank shall be used, as listed in the Technical Guidance Manual. A list of approved installers is available from the Southwest District Health Department.
- (f) The D/B Contractor shall choose a suitable drain field location for each one-acre emitter site and the maintenance complex, and excavate at least one test hole in the presence of the Southwest District Health Department. The Inspector must approve the proposed site and will size each drain field individually based on subsurface soil conditions and the number of occupants. The Geotechnical Report includes site-specific test hole data within the Juniper Butte Area and guidance in the septic drain field design. The drain field at the Maintenance Complex shall be outside of the fenced area in a location similar to that shown on Drawing C-10.
- (g) The drain field should be designed around the infiltration dome chamber system. This system is awarded a 40 percent reduction in size if arranged in trenches.

(6) Roadways and Gravel Parking Areas

- (a) All roadways and gravel areas shall conform to the guidance provided herein and shown on the drawings. All roadways and gravel areas shall be constructed within the project boundaries indicated on the drawings. All disturbed areas shall receive topsoil and seeding.
  - (b) The D/B Contractor shall schedule a pre-condition inspection of the Clover Three Creeks Road and Road SD. Participants will include the Corps of Engineers, BLM, local highway district and other interested parties. The D/B Contractor shall video tape the condition of the Three Creek Road during the pre-condition inspection and keep the tape on record. After completion of the construction work, all disturbed areas are to be restored to the original condition.
  - (c) Access roads to the 0.25-acre emitter sites are considered light duty roads and shall have a driving surface width of 3.0 meters (10 feet) and are intended as single lane roads. Access roads to the one-acre emitter sites, no-drop sites, and sites within the Juniper Butte area are considered medium duty roads and shall have a driving surface width of 4.3 meters (14 feet).
  - (d) The final road surfaces for roadways and parking areas shall consist of 50 mm minus (2"-minus) wearing course in accordance with the outline specifications and recommendations in the Geotechnical Report (Appendix C). Local granular borrow sources where materials could be crushed and screened shall be used.
  - (e) The thickness of wearing course shall be 100 mm (4-inch) on light duty roads, 150 mm (6-inch) on medium duty roads, and 150 mm (6-inch) on gravel areas as detailed on the drawings. The wearing course shall be in accordance with the outline specifications and the recommendations in the Geotechnical Report (Appendix C).
  - (f) All roadways shall have 2% minimum cross slope. The gravel parking areas at the emitter sites shall have a maximum 2% slope to allow leveling of the emitter trailers. The gravel parking area at all other sites shall have a slope between 2-5%.
- (7) Soil Compaction
- (a) Soil compaction shall be achieved with equipment suited to the particular soil being compacted and as approved by the Contracting Officer. Material shall be moisture-conditioned to near optimum moisture to facilitate obtaining the specified compaction with the equipment used.
  - (b) Each layer of material shall be compacted to not less than the percentage of maximum density (ASTM D1557) as specified in the Corps of Engineers Guide Specifications and the Geotechnical Report.
- (8) Fencing

- (a) The fencing will consist of typical Bureau of Land Management (BLM) style and chain-link fencing. BLM fences shall have metal T-post and four wire stands, the bottom of which is a slick wire. The BLM fencing, gates, and bracing shall be constructed similar to the existing fencing at Juniper Butte. The chain-link fencing shall be 8' high (6' of chain-link and 3 barbed wire strands on top). The fencing system shall be constructed of fireproof metal components. Wood fencing components shall not be utilized. The fences at access gates, corner braces and tension post shall be grounded for lightening protection.

(9) Landscape

- (a) Major landscaping will not be a part of the projects or site development. However, all disturbed areas, sites, and cut and fill slopes will be vegetated with an appropriate seed mix. Landscaping shall consist of seeding with BLM mix requirement at all areas disturbed under this contract and where otherwise required or indicated.

(10) Restoration

- (a) All disturbed areas within the project boundaries not shown otherwise, shall be restored by top-soiling with existing stripped material and seeded per specifications.

### 3.2 ARCHITECTURAL REQUIREMENTS

#### 3.2.1 General

The project involves the design and construction of several types of buildings to support the training range. Along with the buildings, are several different types of structures to represent targets. All of the support buildings are to be built to look like agricultural buildings when viewed from the roads. The location of the sites are scattered throughout the Owyhee Desert, with the orientation of the buildings varying between sites.

#### 3.2.2 Space Requirements

The following enumerates the criteria and space requirements and special purpose functional areas of the respective areas/facilities. The spaces for the respective facilities shall comply with those indicated on the corresponding attached drawings.

##### 3.2.2.1 Maintenance Complex

The maintenance support complex is located at the entrance (northwest corner) to the Juniper Butte area training range and supports the activity at the training range. The main building provides a maintenance shop, radio room, electronic repair area, office space, day room, crew quarters, and observation tower. The shop area to have 'open' grate covered trench drain with non-outlet sump pit. A fire protection sprinkler system shall be incorporated into the maintenance building. The complex is supported by CMU structures for housing pumps, and electrical generators. See building computation table at the end of this section. The design-build contractor shall provide a concrete pad with

anchor bolts and a communication antenna. Pad to be similar to the site at Grasmere EC. Product criteria to be equivalent to Rohn Tower Products: (1) SB45G Solid, non-hinged, base for mounting in concrete, ((1) HBU-TVRO wall mounting bracket for offset distances between 18" to 36" (or HBU 6" to 30"), (4) 45 G tower sections, 10' each various nuts and bolts.) Contractor to provide 6" conduit sleeve from pad to Radio Room and 6' above pad. Provide a 4-inch pvc conduit, to originate in the Radio Room and extend underground to a handhole or manhole just outside to the east side of the maintenance compound fence. The site also consists of a fueling station area and propane tank storage area. The entire three-acre site shall be fenced with security chain-link fencing and locking gates. Each entrance gate shall have (1) 24' rolling gate and (1) 12' swinging gate. The entire area within the three (3) acre maintenance complex shall be graveled and graded.

### 3.2.2.2 Maintenance Complex- Generator Building

The building will be a concrete masonry unit structure with metal roof and concrete floor. The building to be sized to accommodate (2) 125 kW generators and their accessories. The concrete floor to consist of a perimeter curb and a grated blind sump to collect engine oil and coolant spills and leaks. The wall height shall be 8'-0" minimum. Roof slope to be 4/12. Metal swing type doors with appropriate locking hardware shall be provided for access, and of sufficient width to install and remove the generator. The building shall be supplied with ventilation intake exhaust air blowers installed to allow air movement through the building provided by a fan mounted on the generator. The generator will have a propane fuel storage tank located adjacent to the building with concrete containment pad.

### 3.2.2.3 Maintenance Complex Pump Building

The building will be a 10' x 10' concrete masonry unit structure with metal roof and concrete floor. The wall height shall be 8'-0" minimum. Roof slope to be 4/12. Metal swing type door(s) with appropriate locking hardware shall be provided for access, and of sufficient width to install and remove the equipment within the pump building. Provide appropriate freeze protection for the equipment inside the building.

### 3.2.2.4 One-Acre Emitter Complex

The emitter site building is small and is repeated at several sites throughout the ETI. Three (3) sites are to be developed under Phase II and seven (7) sites under Phase III. The complex consists of a 448 square foot emitter building and a metal building for an electrical generator. The emitter building houses a work room, toilet room, and mechanical room. Construction consists of CMU and steel joist and metal roofing. See building computation table at the end of this section. The sites also consist of a propane tank storage area and above ground diesel storage tank. The entire one-acre site shall be fenced with security chain-link fencing and rolling gate with padlock provisions. The buildings at all emitter sites shall have bird spikes installed at the roof perimeter and ridge. Site BC is to have government furnished and installed ~~antenna tower~~, solar panels, and radio building. The design-build contractors shall provide and install a concrete pad with anchor bolts, at all emitter sites for a government furnished and installed and a mono-pole communication antenna at all emitter sites. Product criteria to be equivalent to Rohn Tower Products: (1) GTMBX ground mount to be set in concrete;

(1) PSM wall mount, (1) H50 telescoping mast, monopole antenna mast, 1 ¼" O.D. at the top (infinitely adjustable up to 44'.)

#### 3.2.2.5 One Acre Emitter Sites – Generator Building (eight (8) sites)

The building will be a pre-engineered metal structure with metal siding and roof and concrete floor. The wall height shall be 8'-0" minimum. Roof slope to be 4/12. The concrete floor to consist of a perimeter curb and a grated blind sump to collect engine oil and coolant spills and leaks. Metal swing-type doors shall be provided for access and of sufficient width to install and remove the generator. The generator will be a propane fired generator and fueled from the sites propane tank.

#### 3.2.2.6 Quarter Acre Emitter Sites

The ¼ acre sites are uninhabited sites and consist of a gravel parking pad and grounding connection for emitters.

#### 3.2.2.7 Industrial Sites

There are three (3) industrial sites, two (2) of which are no-drop sites and one is a drop site. The no-drop sites (ND4 and ND5) are five (5) acre sites. The drop site is approximately 240 acres in total area of which 30 acres is the industrial building site area. The industrial buildings at the sites are building shells of structural steel frame and metal siding and roofing. The structures are to be pre-engineered metal buildings with various sizes, shapes, and configuration. The round buildings shall be farm type metal grain "silo" framed buildings with silo type siding and roofing. The maximum height of structures at ND-4 and ND-5 to be 26 feet. The floors at all buildings shall be scarified soil. Simulated doors and windows will be painted on the exterior of the building. Metal doors and frames shall be provided at each of the metal buildings for access. Door to be equipped with louvers for ventilation. Ventilators, chimneys, and other rooftop structures are to be provided as detailed. The different arrangements of roof-top structures will give the buildings a different appearance from the air as well as providing target points. The design-build contractor to provide (for storage) 20% more of the various roof type vents. The design/build contractor shall deliver the extra vents to the southeast corner of the maintenance complex. The buildings at ND-4 and ND-5 shall have bird spikes installed at the roof perimeter and ridge. Along with the buildings, the industrial drop site at Juniper Butte area will have simulated railroad tracks and rail cars. The rail cars will be a combination of tanks, gondolas, and box cars. These cars will be constructed of wood frame with metal siding. The railroad track will be constructed of untreated wood ties (4 inches by 8 inches) and either standard railroad rails or metal rails sized to resemble a standard railroad track system. The entire Juniper Butte drop site and the no-drop sites ND-4 and ND-5 shall be entirely fenced with BLM type fencing and locking type swing gates. The design layout for site ND-4 reflects the maximum conditions, final location will be analyzed later upon investigation of sage grouse habitat.

#### 3.2.2.8 Juniper Butte Fencing

The Contractor shall install BLM type fencing with appropriate bracing, post, and gates around the entire Juniper Butte site (see Drawing C-1). This entails removal and/or reinstallation of some of the existing fencing installed under Phase I. Provide additional

fencing as required. The fencing includes 24' wide swing gates with locks where the road enters the area at the north and southeast portions of the site.

#### 3.2.2.9 Early Warning Site (ND7)

This is a no-drop site and consists of four (4) berms, one of which is the actual radar unit supplied by the Government, three (3) that are simulated radar dishes built by the design-build contractor, and three (3) small heated support buildings. The government furnished radar unit is at Saylor Creek Range and is to be removed and reinstalled at ND-7 site by the design-build contractor. The buildings, which are not to be occupied, are to be pre-engineered metal structures with metal siding and roofing. Buildings to be approximately 10' x 20' with a wall height of 8'-0" and a 4/12 roof slope. A 3'-0" x 7'-0" hollow metal door and frame with locking hardware shall be installed at one end. The door shall be equipped with a screened louver for ventilation. The floors shall be scarified soil. Bird spikes shall be installed around the roof perimeter and ridge of the buildings and the simulated radar units. The contractor shall build the three (3) simulated radar dishes of pipe and steel that will mimic the appearance of parabolic, yaggi, and billboard radar antenna units. The contractor shall build the berms and mounting pads for all four (4) radar units. The design-build contractor shall visit the existing Saylor Creek Range to gather information and criteria on the existing height-finder radar. The weight (pad size) and bolt size/pattern for the government furnished radar unit will be identical to the one at Saylor Creek Range. The entire, approximately five (5) acre site shall be fenced with BLM type fencing and locking swing type gate.

#### 3.2.2.10 Surface Air Missiles (SAM) Site

The SAM site is located at the Juniper Butte area and features simulated surface-to-air missiles. The missiles are to be constructed of metal HVAC duct material. Each missile launch site will consist of a concrete footing for steel support framework on an earth berm.

#### 3.2.2.11 Forward Edge Battle Array (FEBA)

The FEBA site is located at the Juniper Butte area and consists of an array of simulated military tanks and vehicles. All work will be Government furnished and installed.

#### 3.2.2.12 Fuels and Storage Tanks

The maintenance complex shall contain four (4), 250-gallon, double-wall above ground storage tanks for vehicle refueling. Two tanks shall be for diesel fuel and two tanks for gasoline. Tanks shall be installed within an approved secondary concrete containment pad with curb system to prevent spills from contaminating the ground. Tanks shall be elevated on a metal structure such that bottom of tanks are 8 feet above ground level. Tanks shall be provided with fill caps/lids, sight glass, gauges and gravity operated type vehicle fueling nozzles similar to fueling station at Saylor Creek Range.



The maintenance complex shall contain four (4) 1,000 gallon above ground propane storage tanks located on the site in a concrete enclosure. Tanks to have manifold system to serve the generators and freeze protection of the potable water tank and fire protection tank. Pressure regulation and excess flow check valves shall be provided at each propane tank to deliver gas at the required pressure to all appliances. The rest of the maintenance facility shall utilize electric heat with a backup generator.

The one-acre emitter sites with propane generator (8 sites) shall contain (2) 3,785L [1,000 gallon] above ground propane storage tanks in a concrete containment pad. Sites without propane generators (2 sites) shall contain one (1) 568L (150 gallon) above ground propane storage tank in a concrete containment pad. Pressure regulation and excess flow check valves shall be provided at each propane tank.

All one-acre emitter sites shall contain (1) 250 gallon, double walled above ground diesel storage tank for vehicle refueling. Tank shall be mounted at ground level within a concrete containment pad. Tanks shall be provided with fill caps/lids, sight glasses, gauges, vehicle fueling nozzles, and hand crank operating pump.

The ND-4 and ND-5 sites shall each have four (4) 1,000 gallon above ground propane storage tanks located within the sites in a covered concrete enclosure. The ND-7 site shall have two (2) 1,000 gallon above ground propane storage tanks located on the site in a covered concrete enclosure. Pressure regulators and excess flow check valves shall be provided at each tank. Minimum gas pressure required at each propane heater is 11" W.C.

### BUILDING COMPUTATION

Room Number	Maintenance Support Bldg.	Net Area (Ft <sup>2</sup> )	Existing or New
100	Porch	205*	New
101	Day Room	702	New
102	Office	429	New
103	Crew Room	239	New
104	Lockers	155	New
105	Storage	349	New
106	Corridor	139	New
107	Rest Room	163	New
108	Shower	34	New
109	Corridor	139	New
110	ESD Room	290	New
110A	Elect Room	54	New
111	Radio Room	287	New
112	Shop	3,284	New
113	Utility Room	91	New
200	Lookout Room	200	New
201	Landing	201	New
<b>SUBTOTAL</b>		<b>6,633</b>	
	Exterior Wall	202	
<b>TOTAL</b>		<b>6,835</b>	

\*Porch area is not included in total

### BUILDING COMPUTATION

Room Number	Emitter Building	Net Area (Ft <sup>2</sup> )	Existing or New
100	Work Room	262	New
101	Toilet	29	New
102	Mechanical Room	76	New
<b>SUBTOTAL</b>		<b>367</b>	
	Exterior Wall	81	New
<b>TOTAL</b>		<b>448</b>	

The mechanical/utility rooms are sized to accommodate at least three different manufacturer's systems. However, if the D-B contractor decides to purchase

equipment that results in an increase in square footage, the acceptability and approval of any layout changes is at the D-B contractor's expense. Any additional construction expense is the D-B contractor's responsibility.

### 3.2.3 Architectural Design

#### 3.2.3.1 Exterior Design

1. The exterior features of the maintenance support building and the one-acre emitter building shall be integral colored split faced concrete masonry units (CMU). The colored CMU shall be coated with a clear water-resistant sealer. Unreinforced cells of the CMU shall be filled with insulation. The roof of the emitter building and the maintenance support building shall be pre-finished, standing seam metal roofing with concealed fasteners. The maintenance building and the emitter buildings shall be fitted with roof gutters and downspouts. Downspouts shall convey runoff away from the structure and deposit non-erosively into a stormwater drainage system. Windows shall be pre-finished clear anodized aluminum thermal barrier windows with clear insulated glazing. Windows at the Lookout Room of the maintenance building shall be hopper type for cleaning. All other windows shall be fixed type. All swinging doors and frames shall be of hollow metal construction. Exterior doors shall be insulated. All windows shall be equipped with a steel plate shutter for securing the building during unoccupied periods. Electric rolling doors (shutters) shall protect the Lookout Room windows. The maintenance building shall be equipped with electric overhead coiling doors at the entrance to the shop area. The exterior color will be pre-finished concrete masonry units to resemble "Desert Beige" to blend with the surrounding landscape.
2. The exterior finish of the buildings at the industrial sites and support buildings at the one-acre emitter sites shall consist of pre-engineered metal buildings of various sizes, shapes, and configurations. The roof and siding panels shall be equivalent to 24 gage corrugated metal panels with exposed fasteners. Metal grain silos shall be used to represent water storage tanks. The primary goal of the industrial buildings, in addition to industrial building appearance from the air, is for the buildings to look like farm or ranch buildings from the roads. Metal doors and frames shall be provided at each of every building at the industrial sites for access. A hollow metal door and frame shall be provided at the silo building. Doors to be equipped with screened louvers for ventilation. All other window or door openings will be simulated with paint on the buildings, and can be painted over to change the appearance of the buildings.

#### 3.2.3.2 Interior Design

1. The interior design of the maintenance support building and the one-acre emitter buildings shall be appropriate for the design function of the space utilizing materials with low maintenance qualities for the anticipated use as well as consideration for the health, fire, and life safety requirements. Metal studs with gypsum board shall be used for interior partition unless otherwise indicated. Section 00890 Outline Specification covers the product/work to be included in the project and requirements concerning materials, finishes, and procedures. Interior finishes shall conform to

- guidance provided herein. The table below provides surface finishes for the maintenance building and the emitter buildings.
2. The interior of the industrial buildings and support buildings shall be exposed metal building system construction components. The metal support buildings at the maintenance complex and one-acre emitter sites shall have sealed concrete floors. The buildings in the industrial building target sites will not have finished floors. Floors will be natural surfaced scarified.

#### 3.2.3.3 Finishes

1. General. Colors listed herein by manufacturer are for identifications only and are not intended to limit selections of manufacturers to those indicated. An exact match to color list is not required. The selections serve only to indicate color, texture, pattern, and quality to which the selected manufacturer must approach. Final selection shall be as approved by the Contracting Officer.
2. Interior Finishes. In the shop area of the maintenance building all walls, ceilings, exposed surfaces and equipment, piping, duct work, etc. shall be painted an off-white to match 'Ponderosa' color: CW 057W white solitude.

#### 3.2.3.4 Exterior Signage

1. Provide and install signage at locations, quantity and design criteria as herein indicated. Signs to be 1/16" aluminum signs installed with pop rivets (2) on 1 ½ "x 1 ½" aluminum angle iron, 8'-0" in length and 5'-0" from centerline of sign to ground level. Coordinate with Government for exact installation location of signs.

<u>SITE</u>	<u>TYPE OF SIGN</u>	<u>NUMBER OF SIGNS PER SITE</u>
1/4 acre site	U.S. GOVERNMENT FACILITY...PUBLIC USE .....A.F.B.	1
1 acre emitter sites	U.S. GOVT. PROPERTY...UNLAWFUL TO ENTER....SUBJECT TO SEARCH	1 at each entrance gate and 1 at each segment of fence (total 5 signs)
Maintenance complex	WARNING - DANGER TRAINING RANGE... UNLAWFUL TO ENTER....SUBJECT TO SEARCH	1 at each entrance gate and 1 at each segment of fence (total 6 signs)
No Drop sites (ND-4, ND-5, ND-7)	DANGER - LASER RANGE.....DO NOT ENTER	1 at each entrance gate and 100 feet from each corner of fence (2 signs per fence segment) (total 9 signs)
No Drop sites (ND-4, ND-5, ND-7)	U.S. GOVT. PROPERTY...UNLAWFUL TO ENTER....SUBJECT TO SEARCH	1 at each entrance gate and 100 feet from each corner of fence (2 signs per fence segment) (total 9 signs)

# **U.S. GOVERNMENT FACILITY**

PUBLIC USE EXCLUDED DURING MILITARY USE  
FOR MORE INFORMATION CALL  
366th Wing Public Affairs

- (1) Sign is white in color, 6 inches by 12 inches.
- (2) The word - U.S. Government - to be in UPPER CASE, as indicated, in 1 inch red letters.
- (3) The rest of the words to be in UPPER CASE, as indicated, in ½ inch black letters.

## **U.S. GOVERNMENT PROPERTY**

IT IS UNLAWFUL TO ENTER  
THIS AREA WITHOUT THE PERMISSION  
OF THE INSTALLATION COMMANDER  
WHILE ON THIS INSTALLATION ALL  
PERSONNEL AND THE PROPERTY  
UNDER THEIR CONTROL  
ARE SUBJECT TO SEARCH

- (1) Sign is white in color, 15 inches wide and 18 inches long.
- (2) The word - U.S. GOVERNMENT PROPERTY - to be in UPPER CASE in 2¾ inch red letters.
- (3) The rest of the words to be in UPPER CASE, as indicated, in 1 inch black letters.
- (4) Signs are normally made on 1/16 inch thick aluminum.

# **WARNING**

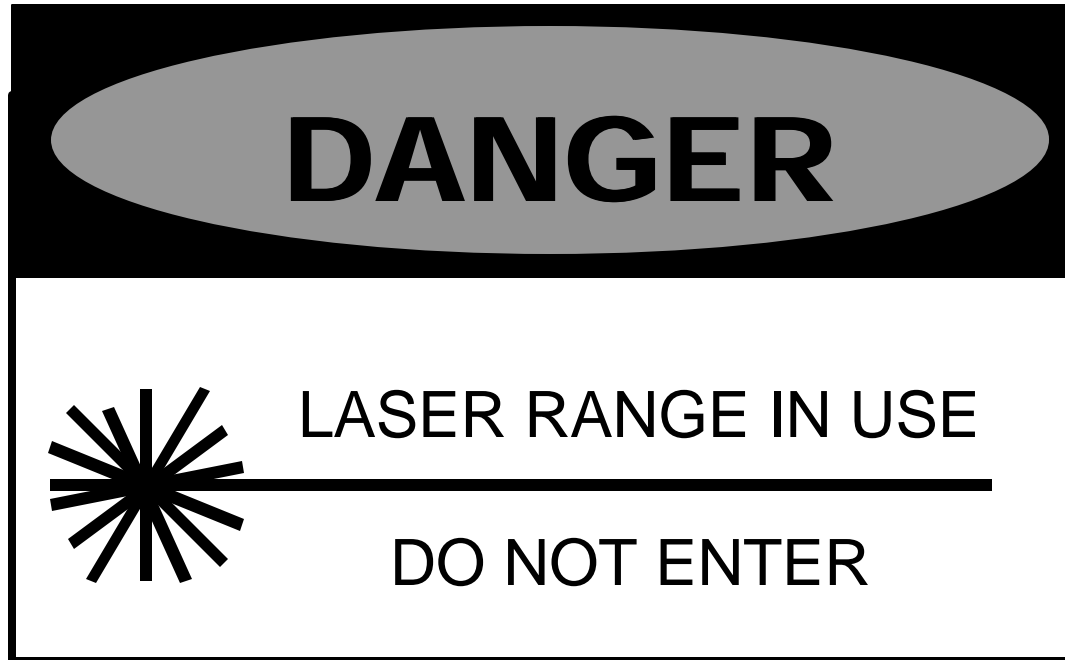
## **DANGER - TRAINING RANGE**

U.S. GOVERNMENT PROPERTY

IT IS UNLAWFUL TO ENTER  
THIS AREA WITHOUT THE PERMISSION  
OF THE INSTALLATION COMMANDER  
WHILE ON THIS INSTALLATION ALL  
PERSONNEL AND THE PROPERTY UNDER  
THEIR CONTROL ARE SUBJECT TO SEARCH

- (1) Sign is white in color, 15 inches wide and 18 inches long.
- (2) The word - WARNING - to be in UPPER CASE, in 2½ inch red letters.
- (3) The words - DANGER - TRAINING RANGE - to be underlined and in UPPER CASE in 1 inch black letters as indicated.
- (4) The rest of the words to be in UPPER CASE as indicated in ¾ inch black letters.
- (5) Signs are normally made on 1/16 inch thick aluminum.





- (1) Sign is white in color, 18 inches wide and 24 inches long.
- (2) Lettering is all in UPPER CASE.
- (3) The word - DANGER - in red background with 3 inch white letters, ¼ inch wide with white ¼ inch border centered in black letters as indicated.
- (4) The rest of the wording in UPPER CASE in 1 inch black letters as indicated.
- (5) Red symbol with red line as indicated.

## INTERIOR FINISHES

### Maintenance Support Building

Functional	Floor	Base	Wall	Clg	Remarks
100 Porch	SC	N/A	CMU	GWB/P	Ctg @8'-0"
101 Day Rm.	*CA	VB	GWB/P	GWB/P	Ctg @8'-0"
102 Office	CA	VB	GWB/P	GWB/P	Ctg @8'-0"
103 Crew Rm.	CA	VB	GWB/P	GWB/P	Ctg @8'-0"
104 Locker	VCT	VB	GWB/P	GWB/P	Ctg @8'-0"
105 Storage	VCT	VB	GWB/P	GWB/P	Ctg @8'-0"
106 Corridor	VCT	VB	GWB/P	GWB/P	Ctg @8'-0"
107 Restroom	CFT	CTB	CWT/PL	GWB/P	Ctg @8'-0"
108 Shower	CFT	CTB	CWT	GWB/P	Ctg @8'-0"
109 Corridor	VCT	VB	GWB/P	GWB/P	Ctg @8'-0"
110 EDS Rm.	RF	VB	GWB/P	GWB/P	Ctg @8'-0"
110A Elect Rm.	VCT	VB	GWB/P	GWB/P	Ctg @8'-0"
111 Radio	VCT	VB	GWB/P	GWB/P	Ctg @9'-6"
112 Shop	SC	N/A	CMU	GWB/P	Ctg @25'-6"
113 Utility	SC	VB	CMU	GWB/P	Ctg @8'-0"
114 Janitor	SC	VB	CWB/P	GWB/P	Ctg @8'-0"
200 Lookout	VCT	VB	GWB/P	GWB/P	Ctg @8'-0"
201 Landing	VCT	VB	CMU	GWB/P	Ctg @8'-0"

### Emitter Building

Functional Area	Floor	Base	Wall	Clg	Remarks
100 Work Rm.	VCT	VB	GWB/P	GWB/P	Clg @8'-0"
101 Toilet	SV	VB	GWB/PL	GWB/P	Clg @8'-0"
102 Mech. Rm.	SC	VB	GWB/P	GWB/P	Clg @8'-0"

### **Abbreviations:**

- CMU- Concrete Masonry Unit: Splitface Block by Builders Masonry Supply, Color: Moondust
- GWB - Gypsum Wallboard (painted)
- SC - Sealed Concrete
- VB - Vinyl Base: 'Armstrong' Vinyl Base, Color: 75- Desert Sand
- CA - Carpet: "Patcraft," Pattern: "Undercover," Color: 18454-207 G-Men
- CTB - Ceramic Tile Base: Color same as CWT
- 
- P1 - Paint: 'Ponderosa' Color: 8671W Burbury Beige  
(All Interior wall/ceiling paint)
- P2 - Paint: 'Ponderosa' Color: 8723M Desert Tumbleweed  
(All Interior doors/frame paint)

CWT -	Ceramic Wall Tile: American Olean, color: Bright 07 Linen, 41/4"x41/4". Base tile same color.
CFT -	Ceramic Floor Tile: American Olean, color: A-07 Linen, 2"x2"
VCT -	Vinyl Composition Tile: 'Armstrong', Color: 51858 Sandrift White
SV -	Sheet Vinyl: 'Armstrong' Translations, Color: 31788 Corn
PL1 -	Plastic Laminate: 'Formica', Color: 7022-58 Natural Canvas (All plastic laminate countertops)
PL2 -	Plastic Laminate: 'Formica', Color: 460-58 Ivory (All upper/lower plastic laminate casework and 4'-0" wainscot)
RF -	Raised Flooring: (To match VCT above)
SSMR -	Standing Seam Metal Roof: (To match 'Berridge', Color: Buckskin) (Match all trim, fascia, prefinished metal siding, and doors/frames to match this color).
CWP -	Corrugated Wall Panels: 'Ponderosa' Color: 8733M Walnut Wash
CMR -	Corrugated Metal Roof: (Painted to match 'Berridge', Color: Buckskin)
TP -	Toilet Partitions: (To match 'Global', Color: #2103 Almond).
LS -	Locker Systems: (To match 'Republic', Color: 89 Cork).
ORD -	Overhead Rolling Doors: Match CWP color
RCD -	Rolling Counter Door: Match CWP color

The 50,000 water tank to be painted same as P1.

\* Kitchen area of Day Room to have VCT flooring.

\*\*4'-0" high wainscot

### 3.3 STRUCTURAL REQUIREMENTS

#### 3.3.1 Structural Design

Structural Design and construction shall be in accordance with the requirements stated herein, the Geotechnical Report and with the applicable requirements of paragraph "2. CODES AND STANDARDS."

1. Structural Design Submittal: Structural design drawings and computations, signed, and sealed by a professional (structural) engineer registered to practice in the United States, shall be submitted in accordance with Section 00810 Design-Build Contract Procedures, paragraph 2 Preparation and Part I Project Design Documents.
2. Seismic Design Requirement: Structural design shall be in accordance with the provision of TI 809-04 Seismic Design for Buildings, dated Dec. 1999. The lateral analysis and design will also include loading placed on exterior walls by drifted snow. Wind and snow design and analysis shall be in accordance with ASCE 7-95.
3. Ground Snow Load: Design for 5 kPa (100 psf) Owyhee county.
4. Basic Wind Speed: Design for 140 km/h (85 mph), exposure 'C'.
5. Wind Uplift Loading: Underwriters Laboratories Class 90 rating.
6. Roof Load: 20 psf (dead) 100 psf (snow)
7. Floor Loads: 50psf; Shop Floor: 125 psf; Observation Tower: 100 psf
8. Foundation Design for frost protection, soil properties, bearing capacity and floor slabs shall be in accordance with the guidance provided in the attached

Geotechnical Report. Foundations and Footings shall be reinforced concrete. The bottom of footings shall be a minimum of 3'-2" (965 mm) below lowest adjacent finish grade for heated building and 4'-2" (1270 mm) for unheated buildings.

9. Material Strengths:

Concrete:  $f'_c=20$  Mpa (3000 PSI) minimum at 28 days.

Concrete (Maintenance Shop Floor):  $f'_c=26.7$  Mpa (4,000 psi).

CMU:  $f'_m= 10$ Mpa (1500 PSI) minimum.

Reinforcing Steel: ASTM A615, Grade 60 change POG grade 60 where welding is required.

Structural Steel:

Rolled wide flange shapes- ASTM A992,  $F_y=345$ Mpa (50KSI)

Other rolled shapes and plates – ASTM A36,  $F_y=250$  Mpa (36 ksi),

Structural Tubing – ASTM A500,  $F_y = 320$  Mpa (46 ksi)

Cold Formed Steel –  $F_y=380$  Mpa (55 ksi)

Open Web Steel Joist:  $F_y=350$ Mpa (50ksi)

10. Fabrication of Structural Steel shall be in accordance with the applicable provisions of AISC-04. Structural framing shall be shop primed in accordance with the fabricators standard system.

11. The structural system for both inhabited and uninhabited buildings must be designed to withstand the drifting snow. The structural system selected needs to provide adequate bracing of the walls to prevent the snow drifts from collapsing the buildings.

12. The structural system of the industrial site buildings shall consist of a series of steel rigid frame, with diagonal rods used to laterally brace the frames at the wall and roof. Since the buildings will not be occupied additional bracing can be added across the building at the frames to resist lateral load placed on the building from snow drifting against the building(s).

13. The buildings at the Industrial Drop Site (Juniper Butte) shall be structurally designed and constructed to the extent that a damaged member of system by a training ordinance will not cause the building structure to collapse.

14. All concrete slabs shall be 4 inches thick, except maintenance shop floor shall be a minimum of 6 inches thick.

### 3.4 MECHANICAL REQUIREMENTS

#### 3.4.1 General

Mechanical design and construction shall be in accordance with the applicable requirements of section 2 Codes and Standards, and the following:

ASHRAE (latest edition)

Heating, Refrigeration, Air Conditioning Handbooks of  
Fundamentals, Applications and Equipment

### 3.4.2 Design Conditions

The outside design temperatures used are based on AFM-88-29 (Engineering Weather Data). Dated July 1978. The inside design temperatures are based on MIL-HDBK-1190 (Facility Planning and Design Guide)

1. Outside Winter
  - Dry Bulb: -18 °C. (99%) [0 °F]
2. Inside Winter
  - a. Maintenance Facility:
    - Shop and Utility Areas, Dry Bulb: 10 °C. [50 °F]
    - Day Room, Radio Room, Look Out, Storage and Office Areas, Dry Bulb: 20 °C. [68 °F]
  - b. FEBA Drop Site: N/A
  - c. SAM Drop Site: N/A
  - d. Drop Site Industrial Complex: N/A
  - e. No Drop 5 Acre Industrial Site ND4: N/A
  - f. No Drop 5 Acre Industrial Site ND5: N/A
  - g. ¼ Acre Emitter Sites: N/A
  - h. 1 Acre Emitter Sites:
    - Work Room and Toilet, Dry Bulb: 20 °C. [68 °F]
    - Mechanical Room, Dry Bulb: 10 °C. [50 °F]
3. Outside Summer
  - Dry Bulb: 36 °C. (2-1/2%) [97 °F]
  - Mean Coincident Wet Bulb: 17 °C. [63 °F]
  - Daily Range: 20 °C. [35 °F]
4. Inside Summer
  - a. Maintenance Facility:
    - Shop and Utility Areas, Dry Bulb: 29.4 °C. [85 °F]
    - Day Room, Radio Room, Look Out, Storage and Office Areas, Dry Bulb: 26 °C. [78 °F.]
  - b. FEBA Dropsite: N/A

- c. SAM Dropsite: N/A
  - d. Drop Site Industrial Complex: N/A
  - e. No Drop 5 Acre Industrial Site ND4: N/A
  - f. No Drop 5 Acre Industrial Site ND5: N/A
  - g. ¼ Acre Emitter Site: N/A
  - h. 1 Acre Emitter Site:
    - Work Room and Toilet, Dry Bulb: 26 °C. [78 °F.]
    - Mechanical Room, Dry Bulb: (Outside design temperature + 10 °F) = 42 °C [107 °F]
5. Degree Days
- Heating: 5732 per year [Base 65°F.]
  - Cooling: 907 per year [Base 65°F.]
6. Elevation
- Maintenance Shop: 1511 m (4,960 feet)
  - 1-acre Emitter Sites (varies): Assume 1524 M (5,000 feet)
7. "U" Values (approximate)
- 8" CMU block wall with steel furring and R-13 batt insulation:  
 $U = 0.369 \text{ W/(m}^2\text{*K)}$  [0.065 Btu/(hr\*ft<sup>2</sup>\*°F)]
  - 10" CMU block wall:  
 $U = 1.60 \text{ W/(m}^2\text{*K)}$  [0.282 Btu/(hr\*ft<sup>2</sup>\*°F)]
  - Metal (Steel) siding wall:  
 $U = 5.36 \text{ W/(m}^2\text{*K)}$  [0.943 Btu/(hr\*ft<sup>2</sup>\*°F)]
  - Standing seam metal (steel) roof with R-33 insulation:  
 $U = 0.170 \text{ W/(m}^2\text{*K)}$  [0.030 Btu/(hr\*ft<sup>2</sup>\*°F)]
  - Standing seam metal (steel) roof:  
 $U = 5.36 \text{ W/(m}^2\text{*K)}$  [0.943 Btu/(hr\*ft<sup>2</sup>\*°F)]
8. Window Properties
- All windows in occupied buildings shall be assumed to be double-paned with 6.4 mm [1/4 in] air space, operable clear glass, and aluminum frame with thermal break. The following properties shall be assumed:
- U-Value,  $U = 3.93 \text{ W/(m}^2\text{*K)}$  [0.691 Btu/(hr\*ft<sup>2</sup>\*°F)]
  - Shading Coefficient, SC = 0.79

### 3.4.3 Thermal Insulation for Mechanical Systems

#### 1. Insulation Materials

All pipe insulation shall be mineral fiber, cellular glass, or flexible cellular type insulation with factory applied jacket. Insulation jackets shall be white vapor retarder all service jacket (ASJ). At all wall, roof, and floor penetrations, an aluminum jacket with factory applied moisture retarder shall be installed over insulation where sealing is required. All hot and cold domestic water piping, evaporative cooler make-up water piping, refrigerant suction lines, air conditioner condensate drain lines, and compressed air discharge lines shall be insulated per outline specifications. Any mechanical piping or plumbing that may be exposed to freezing temperatures, or installed in non-insulated areas shall also be insulated to prevent freezing.

All ductwork insulation shall be rigid mineral fiber, flexible mineral fiber, rigid cellular glass, or flexible cellular glass. Concealed rectangular ductwork shall be installed with flexible insulation with factory applied vapor barrier jacket. Exposed rectangular ductwork shall be installed with rigid insulation with white, paintable factory applied vapor barrier jacket. All supply air, return air, combustion air, and outside air ductwork shall be insulated per outline specifications.

#### 2. Installation

Insulation shall be kept clean and dry at all times. Joints shall be staggered on multi-layered insulation. All insulation, jacketing and accessories shall be installed in accordance with MICA-01 (1993) "National Commercial & Industrial Insulation standards" standard plates except where modified herein. Installation shall be with full length units of insulation and utilizing a single cut piece to complete a run. Cut pieces or scraps abutting each other shall not be used. All penetrations through fire rated assemblies shall be firestopped.

### 3.4.4 Heating, Ventilation and Air Conditioning

#### 1. Heating

Unless otherwise specified, liquid petroleum gas (propane) shall be the heating fuel source. Combustion air openings as required in the NFPA 54 (National Fuel Code), and the Uniform Mechanical Code (UMC), shall be provided for all fuel burning hot water and space heaters where the room volume is insufficient for providing combustion air.

##### a. Maintenance Facility:

The office areas south of the area separation wall (including Look Out) shall be heated by an indoor, vertical, up-flow, electric furnace with a heating output of approx. 22.5 kW [76,770 Btu/hr] with a 208V/3ph power supply. Air shall be circulated throughout the space by a system of supply and return ducts above the ceiling designed and installed per the latest edition of "HVAC System Duct Design" published by the Sheet Metal and Air Conditioning Contractor's National

Association (SMACNA). A smoke/fire damper shall be installed at all penetrations through the area separation wall. Ductwork shall be sized by the equal friction method at a friction rate of 0.067 mm water column per meter [0.08 inch water column per 100 feet] of ductwork. Flexible ductwork shall be used for runouts to diffusers only, and shall be limited to 1.5 m [5 ft]. The shop area north of the area separation wall shall be heated by three (3) heavy duty electric radiant heaters, rated at 13.5KW [46,062 BTU/hr] per heater, at 208V 3 phase. A tank-type propane-fired hot water heater and recirculation pump with piping system shall be provided to maintain the minimum water temperature in the insulated fire protection tank at 42°F (5.6°C) or above. The pump shall be sized to circulate approximately 15 GPM at 25-foot head, with ½ HP 120V/1 Phase motor, and all piping shall be 2-in. diameter with 1-inch insulation. An emersion type temperature sensor shall activate the pump when the water temperature falls below 10°C (50°F) near the base of the tank. The water heater shall be provided with standard controls to maintain the discharge temperature at 15.6°C (60°F). The heater capacity shall be 60 MBH propane gas input, with 60 gallon storage tank. All design and installation shall comply with NFPA 22.

A separate tank-type, propane-fired hot water heater and recirculation pump shall be provided to maintain the minimum water temperature in the insulated domestic water tank at 42°F (5.6°C) or above. The pump shall be sized to circulate approximately 5 GPM at 8 feet head, with 1/20 HP 120V/1 Phase HP motor. The pump and heater shall be controlled similar to the fire protection tank freeze protection system described in the paragraph above. The heater capacity shall be 30 MBH propane gas input with 30 gallon storage tank.

Both freeze protection recirculated hot water systems shall be installed in the pump house and all equipment capacities shall be verified by the designer, based on the tank designs provided. All piping shall be insulated type "K" copper and shall be buried below the frostline. A wall-mounted electric heater shall also be installing in the pump house for freeze protection. The heater shall be rated for 3kW (10,245 BTU/Hr), 208V/3 Phase.

A wall mounted electric heater shall be provided in the generator building, to keep the inside of the building above 40oF while the generator is not operating. The heater shall have an output heating capacity of 5.0kW (17,060 BTU/Hr), 208V/3PH.

b. Drop Site Industrial Complex:

Electric radiant heaters shall be mounted on supports attached to the building structure, and positioned to maintain a small portion (0.9m x 0.9m [3ft. x 3ft.]) of the building shell 1.2°C [2°F] above the surrounding metal surface temperature. Each heater shall have a minimum heating output of 1.5KW [5,118 BTU/hr], and shall be equipped with provisions to disconnect power upon mounting system failure. A total of one hundred forty-eight (148) heaters shall be installed at this site, and distributed amongst the building types as follows:

Building type A – 4 buildings, 8 heaters per building.



Building type B – 1 building, 16 heaters per building.

Building type C – 4 buildings, 8 heaters per building.

Building type D – 8 buildings, 4 heaters per building.

Building type E – 8 buildings, 4 heaters per building.

Building type P – 1 building, 4 heaters per building.

All heaters shall be 120V, 1 phase. Refer to sheet C-13 for building types. In addition to the heaters installed at this site, a total of 148 spare heaters shall be provided. Deliver spare heaters to the Storage Room at the Maintenance Building.

c. No Drop 5 Acre Industrial Site ND4: N/A

Propane-fired radiant heaters shall be installed per concept details on architectural drawings and positioned to maintain a small portion (0.9m x 0.9m [3 ft. x 3 ft.]) of the building shell 1.2°C (2°F) above the surrounding metal surface temperature. It is not required to limit the heated surface area. The temperature differential shall be indicated locally for reading by surface mounted thermometers, one mounted outside the building in the direct path of radiation, the other mounted loft to either side. One pair of thermometers is required per building. Heaters shall be equivalent to a "Hot Stuff" heater, Model No. MH25LP as manufactured by the Mr. Heater Corporation, (216) 881-5500. The heaters shall have a single heat outputs of 6.4 kW (22,000 BTU/hr), and be manually activated without temperature control or electricity.

A total of twenty-four heaters shall be installed at this site and distributed per the following:

Building type L – 2 buildings, 4 heaters per building.

Building type M – 6 buildings, 2 heaters per building.

Air Vents – 4 locations, 1 heater each.

All heaters shall be piped from centrally located propane tank enclosures. See architectural drawings for heater and tank locations.

d. No Drop 5 Acre Industrial Site ND5:

Heaters of the same type, function and mounting as Site ND-4 shall be installed at this site. A total of twenty-seven heaters shall be installed, distributed per the following:

Building type A – 1 building, 6 heaters per building.

Building type B – 5 buildings, 2 heaters per building.

Building type C – 1 building, 2 heaters per building.

Building type D – 1 building, 2 heaters per building.

Building type E – 1 building, 1 heaters per building.

Building type F – 1 building, 2 heaters per building.

Air Vents – 4 locations, 1 heater each.

e. No Drop early Warning Site ND7

Heaters of the same type, function and mounting as Sites ND-4 and ND-5 shall be installed at this site. A total of six heaters shall be installed, two (2) at each of the three buildings at this site.

f. 1 Acre Emitter Site (typical BA, BB, BC, BD, BE, BF, BG, BI, BJ, BK):

The Work Room shall be heated by an electric heating element integral to a packaged terminal air conditioning unit installed through the wall. This unit shall have an output heating capacity of 14.9 kW [51,000 Btu/hr] and shall be capable of providing ventilation air to the space.

The mechanical room and restroom shall be heated by separate wall mounted propane heaters to prevent freezing during unoccupied periods. Heaters shall not require electrical connection for operation. Each unit shall have an output heating capacity of 2.6 kW [9,000 Btu/hr] minimum.

At all sites except BB and BK, a wall-mounted propane heater shall be provided in the generator building, tow warm up the ambient air prior to starting primary generator. The heater shall have an output heating capacity of 5.2 kW [18,000 Btu/hr] minimum.

2. Ventilation

Ventilation shall be provided in accordance with ASHRAE Ventilation Standard 62, not less than 9.4 L/s [15 ft<sup>3</sup>/min] per person for general occupancy areas for acceptable indoor air quality. All ductwork shall be galvanized steel, constructed in accordance with SMACNA Low Pressure Duct Standards, and insulated per outline specifications.

For the purpose of calculating occupant loads, the following guidelines shall be used:

<u>Area Type</u>	<u>m<sup>2</sup>/person, [ft<sup>2</sup>/person]</u>
Day Room	4.7 [50]
Office	9.3, [100]
Locker	4.6, [50]
Storage	27.9, [300]
Shop	9.3, [100]

a. Maintenance Facility:

For the south half of the building, ventilation outside air shall be ducted from a 0.60 m x 0.60 m [24 in x 24 in] wall louver to a return air plenum connected to the electric furnace serving the south half of the building. The louver shall be located in the south Shop (112) wall adjacent to the Look Out (200) room. Refer to Architectural sheet A-1 for louver location. The electric furnace shall provide outside air continuously while in operation.

A roof mounted centrifugal exhaust fan shall be installed to exhaust the Rest Room (107) at a minimum rate of 24 L/s [50 ft<sup>3</sup>/min] per water closet. The exhaust fan shall be controlled by a timer to operate during occupied periods.

In the ESD Room, a soldering cross draft table shall be installed with slotted exhaust hood, ductwork, and roof mounted fan. The table shall be 24-inch x 18-inch with side baffles. The hood shall be designed per AFOSH Standard 161-2, Section 6, for Class II contaminants. To make-up the exhausted air, an inline fan system shall be installed to draw in air through an 18-inch x 18-inch louver with 2" T.A. filter and access panel in the south wall of the building and discharge into the room at the ceiling. A 5.0 kW duct heater shall be installed upstream from the fan, sized to make-up approximately 80 percent of approximately 720cfm exhaust air.

In the shop area, ventilation shall be provided during occupied periods by one (1) of two (2) methods. When cooling is desired, ventilation shall be provided by a pad mounted evaporative cooler located near the west wall, with duct work discharging 3,775L/sec. [8,000 ft<sup>3</sup>/min.] of tempered outside air into the shop. When cooling is not desired, a wall propeller fan shall intake 283 L/sec. [600 ft<sup>3</sup>/sec] of outside air into the shop. Selection of the operational system shall be by a "cool-off-vent" switch mounted on the wall. Refer to sheet A-1 for the evaporative cooler and propeller fan locations.

An inline centrifugal vehicle exhaust fan system shall be hung from the shop roof structure, and discharged to the atmosphere. The system shall include ductwork connected to three (3) telescopic booms with hose reels terminated by tailpipe adapters for 2 in (minimum) exhaust pipes. Refer to Architectural Sheet A-1 for drop locations. The system shall be designed per AFOSH Standard 161-2, Section 7

A general exhaust fan shall be installed in the shop, to maintain the concentration levels of carbon monoxide and other contaminants below permitted levels. The exhaust system shall be designed per AFOSH Standard 161-2, Section 7.

A 1.22m x 1.22m [48in x 48in] relief/intake louver with motorized damper shall be installed low in the north wall. The damper shall be interlocked to open while the evaporative cooler, the wall propeller fan, the vehicle exhaust and/or the general shop exhaust systems are in operation.

Intake and discharge air louvers in the generator building shall be provided as sized per the generator manufacturer's literature. A parallel blade damper with electric actuator shall be provided at each opening, and shall be interlocked to open while the generator radiator fan is running.

A propeller-type, roof-mounted exhauster shall be provided to ventilate the pump house when the indoor temperature reaches 26.7°C (80°F). The fan shall be sized to provide a minimum 10 air changes per hour. A grille shall be installed in the door for air intake.

b. Drop Site Industrial Complex: N/A

These buildings are not to be occupied. Therefore, no ventilation shall be required.

c. No Drop 5 Acre Industrial Site ND4: N/A

All buildings at this site, which contain propane-fired heaters shall be naturally ventilated with a low grille in one door and a high grille in the gable at the opposite end of the building.

d. No Drop 5 Acre Industrial Site ND5: N/A

All buildings at this site, which contain propane-fired heaters shall be naturally ventilated with a low grille in one door and a high grille in the gable at the opposite end of the building.

e. No Drop Early Warning Site ND7: N/A

All buildings at this site, which contain propane-fired heaters shall be naturally ventilated with a low grille in one door and a high grille in the gable at the opposite end of the building.

f. 1 Acre Emitter Site (typical for sites "BA", "BB", "BC", "BD", "BE", "BF", "BG", "BI", "BJ", "BK"):

A ceiling mounted fan shall be installed to exhaust the Rest Room (101) at a minimum rate of 24 L/s [50 ft<sup>3</sup>/min] per water closet. An exhaust discharge louver shall be located in the west wall above the window per sheet A-7. The exhaust fan shall be controlled by a wall switch with delay, to turn fan off 30 minutes after restroom is unoccupied. The restroom door shall be undercut by 2.5 cm [1 in] to make-up the exhausted air.

(Typical for sites except "BB" and "BK").

Intake and discharge air openings in the generator building shall be provided as sized per the generator manufacturer's literature. A parallel blade damper with electric actuator shall be provided at each opening, and shall be interlocked to open while the generator radiator fan is running.

3. Air Conditioning

a. Maintenance Facility:

Cooling in the office areas south of the area separation wall shall be provided by a direct expansion (DX) coil installed in the Utility Room (113) furnace return plenum. This coil shall be connected to a nominal 5-ton split system condensing unit located to the west of the building.

The Shop (112) north of the area separation wall shall be cooled by a pad mounted evaporative cooler discharging 3,775 L/sec [8,000 ft<sup>3</sup>/min] tempered outside air at a saturation efficiency of 85%.

Direct cooling is not required for the Rest Room (107) or Utility (113) Rooms.

- b. 1 Acre Emitter Site: (typical BA,BB,BC,BD,BE,BF,BG,BI,BJ,BK)

Cooling for the Work Room (100) shall be provided by a packaged terminal air conditioning unit (PTAC) installed through the north wall. This unit shall have a nominal 2-Ton cooling capacity.

Direct cooling is not required for the Toilet (101) or Mechanical (102) rooms.

- c. No Drop 5 Acre Industrial Complex Sites ND4 and ND5:

These buildings are not to be occupied. Therefore, no mechanical cooling shall be required

- d. Drop Site Industrial Complex: N/A

These buildings are not to be occupied. Therefore, no mechanical cooling shall be required.

- e. No Drop Early Warning Site ND7: N/A

These buildings are not to be occupied. Therefore, no mechanical cooling shall be required.

#### 4. HVAC Controls

All mechanical systems shall be provided with a complete, stand-alone electric or electronic control system as described below. All controllers and components provided shall be Year 2000 compliant.

- a. Maintenance Facility:

The electric furnace and condensing unit split system shall be controlled by a programmable thermostat mounted in the Day Room (101) on an interior wall below a ceiling return grille. Per 1997 4BC, Section 713.10, a duct mounted smoke detector shall be provided and installed upstream from each area separation wall duct penetration to activate the smoke/fire damper. The smoke detector in the supply air duct shall also be interlocked with the furnace to shut-off the fan in the event of a fire. The ducts shall be sized to maintain the required air velocity per the detector manufacturer's specifications.

The ESD Room exhaust fan and in-line make-up air fan shall be controlled together by a wall-mounted switch. The electric duct heater shall be equipped with a proof-of-flow switch and shall turn on only when the fan is running, and the O.S.A. temperature is 4.5°C (40°F), as measured by duct-mounted temperature sensor.

The evaporative cooler shall be controlled by a line-voltage thermostat. A smoke detector shall be installed in the supply air duct and interlocked to shut-off the unit in the event of a fire.

The vehicle exhaust fan shall be activated by a wall switch and the general shop exhaust fan shall be controlled with one or more carbon monoxide detector(s) mounted in the shop.

The electric radiant tube heaters in the Shop (112) shall be provided with 24 VDC transformer and thermostats mounted in the space, out of the direct radiation pattern.

In the pump house, separate line voltage thermostats shall be provided. One shall operate the exhaust fan when the temperature rises above 80°F (adj.) and the second shall turn on the electric heater when the temperature drops below 45°F (adj.).

In the generator building, a line voltage thermostat shall be installed to turn on the electric heater when the temperature drops below 45°F (adj.). The intake and discharge louvers shall be interlocked to open when the radiator fan is operating.

The fire protection water tank freeze protection system recirculation pump shall operate continuously when the water temperature at the base falls below 10°C (50°F), and shall operate for a minimum of six hours to prevent cycling. The water heater shall be provided with standard LPG gas controls, and be set to maintain a water temperature of 15.6°C (60°F) in the water heater tank. The domestic water tank shall be controlled similarly.

b. 1 Acre Emitter Site: (typical BA, BB, BC, BD, BE, BF, BG, BI, BJ, BK)

The Work Room (100) PTAC unit shall be provided with integral factory-mounted heat-off-cool controls on the front panel.

The wall-mounted heaters in the Toilet (101) and the Mechanical Room (102) shall be provided with factory-mounted controls with integral thermostat and piezo ignition.

At all sites other than BB and BK, the wall-mounted propane heater in the generator building shall be provided with factory mounted controls and piezo ignition.

### 3.4.5 Gas Piping

The heating fuel source shall be liquid petroleum gas (propane). The contractor's scope of work shall include the design of the gas distribution system from the exterior storage tank(s) to all appliances listed. All propane tanks, interior and exterior gas piping shall be provided by the contractor. Sizing and installation of the gas system shall be in accordance with the manufacturer's recommendations and applicable sections of the NFPA 54 (National Fuel Gas Code), NFPA 58 (liquefied petroleum gases) the Uniform Plumbing Code, and the American Gas Association. The heat content of propane is approximately  $26.4 \text{ kW*hr/m}^3$  [2,550 Btu/ft<sup>3</sup>], with a specific weight of approximately 1.52. Pressure regulator(s) shall be installed at each propane tank to deliver gas within the manufacturer's recommended inlet pressure range for each appliance. All regulators shall be vented to the exterior of the building. Provide excess-flow check valves to prevent loss of fuel if piping is damaged.

Tanks shall be centrally located near an access road, and in accordance with the NFPA #58. All exterior piping shall be buried 0.46m [18in], and total piping volume shall be limited to less than 10% of the total tank volume at each site.

All buried gas piping shall be installed with thermoplastic resin protective coating.

1. Maintenance Facility:

Assuming that the freeze protection heaters are operating 18 hours/day, and one of two generators are operating at 100% load for 4 hours/week, and at 50% load for 12 hours/week, the daily gas input is  $((60,000 + 40,000) \text{ BTU/hr} * 18 \text{ hr/day}) + (1,106,000 \text{ BTU/hr} * (4/7) \text{ hr/day} + (656,000 \text{ BTU/hr} * (12/7) \text{ hr/day}) = 3,890,857 \text{ BTU/day} * (1 \text{ lb}/21,543 \text{ BTU}) * 1 \text{ gal}/4.20 \text{ lb}) = 43.0 \text{ gal/day}$ . At this rate of consumption, the tanks will need to be refilled every  $4 * 1,000 \text{ gal} * (\text{day}/43.0 \text{ gal}) = 93 \text{ days}$ .

Propane gas piping shall be provided for connection to the following:

- Backup Generator - 324 kW [1,106 MBH] (input at full load)
- Backup Generator - 324 kW [1,106 MBH] (input at full load)
- F.P. Tank Freeze Protection - 17.6 kW [60 MBH] (input)
- Domestic Water Tank Freeze Protection - 11.7 kW [40 MBH] (input)

2. 1 Acre Emitter Sites: All but BK and BB

a. Sites BA,BC,BD,BE,BF,BG,BI,BJ:

The estimated peak propane load for each site is 337 kW [1,150 MBH]. Two (2) 3785L [1,000 gal] above ground storage tanks shall be provided with individual shut-off valves and pressure regulation. Assuming operation of generator is limited to less than 15 hours per week at 50% load, the fuel storage tank will need to be refilled every ten weeks. Propane gas piping shall be provided for connection to the following:

- Primary Generator – 324 kW [1,106 MBH] (Input at full load)
- Wall-Pak Heater “HEAT” – 3.2 kW [11 MBH] (input)
- Wall-Pak Heater “HEAT” – 3.2 kW [11 MBH] (input)
- Generator Building Heater – 6.4 kW [22 MBH] (input)

b. Sites BB, BK:

The estimated peak propane load for each site is 6.4KW [22MBH]. One 568L (150 gallon) above ground storage tank shall be provided with shut-off valve and pressure regulation. Assuming the two (2) wall heaters are in operation for 42 hr/wk, the tank will need to be refilled every 102 days. Propane gas piping shall be provided for connection to the following:

- Wall-Pak Heater "Heat" – 3.2KW [11 MBH] (input)
- Wall-Pak Heater "Heat" – 3.2KW [11MBH] (input)

### 3. No Drop Site 5 Acre Industrial Site ND4

The estimated maximum propane load for 24 heaters, operating at full heating capacity ( 6.4 kW [ 22,000 BTU/hr]), shall be 154kW [ 528,000 BTU/hr]. Four (4) 3,785 liter [1,000 gallon] above ground storage tanks in enclosure shall be provided with individual shut-off valves and pressure regulation. Excess flow check valve(s) shall also be provided at each tank enclosure to shut off the gas supply upon damage to the heaters and/or piping system. Assuming 7 of 24 heaters are operating constantly at 6.4 kW [22,000 BTU/hr], the daily demand for propane is  $7 * 22,000 \text{ BTU/hr} * 24 \text{ hr/day} * (1\text{lb}/21,548 \text{ BTU}) * (1 \text{ gal}/4.20 \text{ lb}) = 40.8 \text{ gal/day}$ . Based on this rate of consumption, the tanks will need to be refilled every  $(4,000 \text{ gal} * (\text{day}/40.8 \text{ gal})) = 98 \text{ days}$ .

Propane gas piping shall be provided for connection to the following:

- Mr. Heater - 6.4 kW [ 22,000 BTU/hr] (maximum input) (quantity 24)

Gas pressure required: 11" W.C.

### 4. No Drop Site 5 Acre Industrial Site ND5

The estimated maximum propane load for 27 heaters, operating at full heating capacity ( 6.4 kW [ 22,000 BTU/hr]), shall be 173kW [ 594,000 BTU/hr]. Four (4) 3,785 liter [1,000 gallon] above ground storage tanks in enclosure shall be provided with individual shut-off valves and pressure regulation. Excess flow check valve(s) shall also be provided at each tank enclosure to shut off the gas supply upon damage to the heaters and/or piping system. Assuming 7 of 27 heaters are operating constantly at 6.4 kW [22,000 BTU/hr], the daily demand for propane is  $7 * 22,000 \text{ BTU/hr} * 24 \text{ hr/day} * (1\text{lb}/21,548 \text{ BTU}) * (1 \text{ gal}/4.20 \text{ lb}) = 40.8 \text{ gal/day}$ . Based on this rate of consumption, the tanks will need to be refilled every  $(4,000 \text{ gal} * (\text{day}/40.8 \text{ gal})) = 98 \text{ days}$ .

Propane gas piping shall be provided for connection to the following:

- Mr. Heater - 6.4 kW [22,000 BTU/hr] (maximum input) (quantity 27)

Gas pressure required: 11" W.C.

### 5. No Drop Early Warning Site ND7

The estimated maximum propane load for 6 heaters, operating at full heating capacity (6.4 kW 22,000 BTU/hr]), shall be 38.4 kW [132,000 BTU/hr]. Two (2) 3,785 liter [1,000 gallon] above ground storage tanks in enclosure shall be provided with individual shut-off valves



and pressure regulation. Excess flow check valve(s) shall also be provided at each tank enclosure to shut off the gas supply upon damage to the heaters and/or piping system. Assuming 3 of 6 heaters are operating constantly at 6.4 kW 22,000 BTU/hr], the daily demand for propane is  $3 * 22,000 \text{ BTU/hr} * 24 \text{ hr/day} * (1 \text{ lb}/21,548 \text{ BTU}) * (1 \text{ gal}/4.20 \text{ lb}) = 17.5 \text{ gal/day}$ . Based on this rate of consumption, the tanks will need to be refilled every  $(2,000 \text{ gal} * (\text{day } 17.5 \text{ gal})) = 114 \text{ days}$ .

Propane gas piping shall be provided for connection to the following:

- Mr. Heater - 6.4 kW 22,000 BTU/hr] (maximum input) (quantity 6)

Gas pressure required: 11" W.C.

### 3.4.6 Plumbing

#### 1 General

All plumbing materials shall be per the outline specifications. All systems shall be designed according to the latest version of the Uniform Plumbing Code, and the design criteria provided.

The scope of work shall include all waste, vent, hot and cold domestic water, air conditioning condensate drain and compressed air piping within 2.5 m [5 ft] from the exterior of the building. All propane and electric water heaters shall also be included.

All domestic cold and hot water piping shall be installed sloped to a central low point, or points as required to fully drain the system to prevent freezing while unoccupied.

#### 2 Fixtures

Fixtures shall be water conservation type, in accordance with NAPHCC-01 National Standard Plumbing Code (1996). All fixtures shall be standard vitreous china. Water closets shall be floor mounted, pressure-assisted tank type with 1.6 gallon per flush. Lavatories shall be countertop or wall mounted and provided with polished chrome faucets, and thermostatic mixing valves to limit discharge temperature to 43°C [110 °F]. In the Maintenance Facility Restroom, the water closet and lavatories shall be ADA compliant. Fixtures shall be equipped with appurtenances such as traps, faucets, stop valves, and drain fittings. Each fixture shall be equipped with a trap. Plumbing fixtures shall be designated as follows:

Plumbing Fixture Schedule

<u>Symbol</u>	<u>Fixture</u>	<u>DFU</u>	
<b>P-1</b>	Water Closet	5.0	5.0
<b>P-2</b>	Urinal	4.0	4.0
<b>P-3A</b>	Lavatory – Countertop Mounted	1.0	1.0
<b>P-3B</b>	Lavatory – Wall Mounted	1.0	1.0
<b>P-4</b>	Kitchen Sink	2.0	2.0
<b>P-5</b>	Shower	2.0	2.0
<b>P-6</b>	Mop Sink	3.0	3.0
<b>HB</b>	Hose Bibb	0.0	2.5
<b>FD</b>	Floor Drain w/trap primer	0.0	0.0

DFU = Drainage Fixture Units, as defined by the UPC

WSFU = Water Supply Fixture Units, as defined by the UPC

To size hot and cold water branches, assume 75% of the fixture WSFU value.  
Refer to Section 3.4.8 for ADA requirements.

a. Maintenance Facility:

Fixtures shall be provided as indicated on Architectural Sheet "A-1". Based on approximately 23 drainage fixture units, a 3" building sewer connected to a 3,000 gallon septic tank shall be required. Refer to section 3.1.3.4.f for septic tank and drain field description. In addition to the fixtures indicated on sheet "A-1", a floor drain shall be installed in the restroom, utility room, and the shower area.

Assuming a peak building water supply demand of 25.0 WSFU and 310 kPa [45 psig] discharge pressure from the site potable water booster system, a 3.2 cm [1-1/4 in] water main shall be required to supply the building. A packaged pressure booster system shall be installed in the utility room. The system shall be sized to serve all fixtures inside the building. A tank type electric water heater, rated at 30.0KW [102,306 BTU/hr] for 208V/3ph power, with a 303L [80 gal] storage tank shall be installed in the utility room. Water heater shall be installed with expansion tank, temperature/pressure relief valve, and 0.3KW [1/2hp] hot water recirculation pump. In addition to the fixtures indicated on sheet "A-1", a 1.9 cm [3/4 in] cold water connection with provisions for drawing shall be made to the evaporative cooler located outside.

b. 1 Acre Emitter Site: (BA,BB,BC,BD,BE,BF,BG,BI,BJ,BK)

Fixtures shall be provided as indicated on Architectural sheet "A-7". Based on approximately 6 drainage fixture units, a 3" building sewer connected to a 2,840 L [750 gallon] septic tank shall be required. Refer to section 3.1.3.4.e for septic tank and drain field description.

A 3,785 L (1,000 gal) domestic water storage tank, and packaged booster pressure system shall be installed in the mechanical room, complete with pressure tank,

control panel, and check valves. Provisions shall be made for draining the storage tank to the exterior of the building during periods of non-use.

A single instantaneous electric water heater shall be provided below the kitchen sink to provide on-demand hot water to the kitchen sink and lavatory. Assuming a 39 °C [70 °F] water temperature rise and 2.8 L/min [0.75 gal/min], a 7.5 kW [25,590 Btu/hr] water heater shall be provided.

### 3 Compressed Air System:

A compressed air system shall be provided and installed by the contractor in the Maintenance Facility. Assuming a capacity of 750 L/min [26.7 ft. 3/min] of air delivered at 830 kPa [120 psig], a duplex system consisting of two vertical tank mounted compressors, 3.7 kW [5 hp] each shall be required.

Compressed air piping system shall be designed and installed to outlets with quick-disconnect couplings in the Shop as indicated on Architectural sheet "A-1".

#### 3.4.7 Seismic Protection

All mechanical equipment and piping in the Maintenance Facility and 1-Acre Emitter sites shall be provided with anti-sway and support devices in accordance with AFM-88-3, Chapter 13 (Seismic Design for Buildings). The requirements for seismic protection measures described in this section shall be applied to mechanical/electrical equipment and systems specified herein. Seismic protection requirements shall be in accordance with International Conference of Building Officials ICBO-01 Uniform Building Code, using an importance factor of 1.25. These facilities shall be designed as being in seismic zone 2B; no other zone values shall be used to establish bracing requirements. Lateral support against earthquake induced forces shall be accomplished by positive attachments without consideration of friction resulting from gravity loads. Equipment sway bracing shall include sufficient bracing for equipment to resist a horizontal force equal to 0.94 times the weight of equipment without exceeding safe working stress of bracing components. Support shall include, but not be limited to ductwork, fans, supply, return, and exhaust terminals, piping and water heaters.

#### 3.4.8 Handicapped Requirements

The maintenance facility shall be provided with ADA fixtures in the restroom only. The ten (10) one-acre site buildings have no handicap requirements.

#### 3.4.9 Future Expansion

No provisions for future expansion shall be required.

#### 3.4.10 Training

All training sessions shall be scheduled by the contractor and coordinated with the Owner's schedule. Operation and Maintenance manuals and Test and Balance reports shall be completed, prior to training. Training shall include demonstrating start-up, shut-down and normal operation of all mechanical, plumbing and fire protection systems installed by the contractor. Regular preventative maintenance

procedures and other occasional repairs shall be demonstrated at the training session. All training sessions shall be videotaped for the Owner's reference. Training shall be provided as follows: eight (8) hours for the maintenance facility; two (2) hours for Site ND-5 (ND-4 & 7 are similar), and two (2) hours for a single one-acre emitter site with back-up generator. Times above do not include travel time.

### 3.4 11 Testing and Balancing

#### 1 General

The facility shall be essentially complete prior to testing. Doors and windows surrounding each area to be balanced shall be closed during testing and balancing operations. Supply and exhaust air systems shall be complete and operable. If a system cannot be adjusted to meet the design requirements, the Contractor shall promptly notify the Contracting Officer in writing. Each system shall be adjusted until all flow quantities are within plus ten percent and minus zero percent.

#### 2 General Balancing Methods.

Testing and balancing shall be performed in complete accordance with AABC and NEEB National Standards for field measurements and instrumentation as applicable to air distribution systems. Throttling losses shall be limited. Air flow adjustments shall be made by first adjusting the fan speed to meet the design flow conditions. Flows and pressures shall be checked in all main risers and supply ducts at all supply and exhaust fan discharges. Following final acceptance of certified reports by the Contracting Officer, the setting of all HVAC adjustment devices including splitters and dampers shall be permanently marked by the testing and balancing engineer so that adjustment can be restored if disturbed at any time.

#### 3 Acoustics

After the systems are properly tested, adjusted and balanced, sound levels shall be checked in accordance with the applicable provisions of AABC MN-1. Octave-band analysis and noise-criteria curve data shall be recorded on forms shown in AABC MN-1. The maximum NC level design criteria due to HVAC equipment or airflow noise shall not exceed 35 in any indoor occupied area, and shall not exceed 50 in any maintenance shop areas. Any areas not meeting the requirements shall be clearly indicated on the form and an explanation of all discrepancies shall be provided in test report.

### 3.4.12 On-Site Vehicle Fuel Stations

At the maintenance facility, on-site vehicle fuel stations shall be installed where indicated on plans. Stations shall consist of four (4) 946-liter [250-gallon] double-wall, above ground tanks with fill caps/lids, sight glass, gauges, vehicle fueling nozzles, and crank operated pump. Fuel shall be refilled by tanker truck. A fuel spill containment pad shall be installed below fuel stations, and shall have volume sufficient to contain leakage of a single tank.

### 3.4.13 Fire Protection Sprinkler System

In the maintenance facility, an automatic, wet pipe fire sprinkler system shall be installed for coverage of the office and shop areas. The system shall be served by the 70,000 gallon above ground storage tank, and delivered by a 60 HP pump in the pump house. The riser shall be installed in the storage room as indicated on the architectural drawings. Piping above the offices shall be installed on the bottom chord of the roof joist, with sheeting to keep insulation on top. Piping shall be exposed in the shop area, requiring close coordination with the bridge crane and electric heaters. Maintenance building shall be heated at all times to prevent freezing of the fire protection system.

## 3.5 ELECTRICAL REQUIREMENTS

### 3.5.1 Design Criteria

The following documents will be used as design criteria:

ANSI/IEEE 141	IEEE Recommended Practice for Electric Power Distribution for Industrial Plants
ANSI C2-1997	National Electrical Safety Code
EIA/TIA TSB 36	Technical Systems Bulletin Additional Cable Specifications for Unshielded Twisted Pair Cables
EIA/TIA TSB 40	Additional Transmission Specifications for Unshielded Twisted Pair Connecting Hardware
EIA/TIA 568A	Commercial Building Telecommunications Wiring Standard
EIA/TIA 569	Commercial Building Standard for Telecommunications Pathways and Spaces
EIA/TIA 607	Commercial Grounding and Bonding Requirements for Telecommunications
IES	Lighting Handbook
MIL HDBK 1008C	Fire Protection for Facilities
NFPA 70	1996 National Electric Code
NFPA 72	National Fire Alarm Code
NFPA 101	Life Safety Code
NFPA 780	Lightning Protection Code
TM 5-811-1	Electric Power Supply and Distribution
USAF/LEE ETL 87-9	Engineering Technical Letter (ETL) 87-9: Prewiring, Dated 21 Oct 87
USAF ETL 91-6	Engineering Technical Letter (ETL) 91-6: Cathodic Protection, Dated 3 July 91
USAF ETL 94-5	Engineering Technical Letter (ETL) 94-5: Fire Protection Engineering Criteria and Technical Guidance - Emergency Lighting and Marking of Exits

Electrical design and installation shall comply with the Mountain Home Air Force Base Electrical Distribution Standards, Architectural Compatibility and Engineering Standards, and other applicable standards. Equipment shall conform to the requirements of the National Electrical Manufacturers Association and Underwriters Laboratories, Inc.

Underground lines/duct shall be installed in accordance with the guidance provided herein and in specification 02316 "Excavation, Trenching, and Backfilling for Utility Systems".

### 3.5.2 Electrical Service

(1) The following criteria pertains to the general exterior service design requirements:

- (a) Secondary feeders from transformer to facility shall be copper, 600V, Type USE for service entrance cable, directly buried.
- (b) Neutral conductors, cable shields, and all other noncurrent-carrying metallic parts of equipment shall be grounded. Provide ground resistance of not greater than 25 ohms.
- (c) Label all cables, where they come from and where they go, with metal embossed tags.
- (d) All pad-mounted equipment shall have standard manufacturer's finish. Provide minimum 100 mm-thick concrete pad on gravel base. Pad shall extend a minimum of 300 mm beyond the footprint of installed equipment. Provide a ground grid consisting of #1/0 awg CU conductor with a CU ground rod installed at each corner.
- (e) All cabinets shall be provided with padlock hasps.
- (f) Aluminum shall not be used in contact with earth or concrete.
- (g) Control wiring and communications wiring shall not share the same conduits, raceways, or enclosures as electrical power wires (120 volts nominal or larger).

### 3.5.3 Lighting

(1) The following criteria pertains to the general lighting design requirements:

- (a) Lighting levels shall be designed in accordance with Illumination Engineering Society (IES) standards unless otherwise noted. IES standards give the following light levels in areas that are contained in this project:

Office Areas	20-30-50 foot-candles
Conference Rooms	20-30-50 foot-candles
Maintenance Areas	20-30-50 foot-candles
Electronics Repair	50-75-100 foot-candles with task lighting
Lunch Room	10-15-20 foot-candles
Exterior at Entries	5 foot-candles
Parking Areas	1 foot-candle average

- (b) Interior Lighting. Lighting fixtures shall be fluorescent where ever possible. Dual level switching shall be provided for each individual area and room throughout the facility. Fluorescent tube fixtures shall be rapid or instant start

with matching ballast. The use of low mercury content lamps is recommended.

- (c) Exit and Emergency Lighting. Exit lights (LED battery type with red letters) and emergency lights shall be provided as required by NFPA 101, Life Safety Code. The lights shall function for a minimum of 90 minutes upon loss of normal power. Wall mounted battery back-up type fixtures are not acceptable.
- (d) Exterior Lighting. The exterior lighting system shall consist of metal halide fixtures. Parking light fixtures shall be rectangular 'shoe-box' style fixtures with dark bronze finish and uplight cut-off shields. Fixtures shall be provided at the exterior doors (35 watt minimum lamp size). Provide bollard type walkway lighting in foot-traffic areas. Site and building mounted fixtures shall be controlled by a photo cell and timer combination with manual override. Low voltage control panels, with photocell-input control and timer, used in conjunction with interior lighting controls are an acceptable means of control for exterior and building mounted lighting.

### 3.5.4 Building Power

- (1) The following criteria pertains to general building power design requirements:
  - (a) The main distribution panel shall be a free standing switchboard with ground bus and copper bus bars with main breaker. Meters shall be provided with the main switchboard. Branch circuit panelboards shall have bolt-on circuit breakers and copper bus bars. Minimum size overcurrent protection device for branch circuits shall be 20 amps. Ensure proper coordination and withstand ratings for all overcurrent protection devices. Phase loading shall be balanced to within 10% at all panelboards.
  - (b) All distribution equipment and services shall be sized to allow 20% growth.
  - (c) One duplex 110 v/20 amp receptacle shall be provided every 3000 mm (12') along walls, within 1800 mm (6') of each door and for any wall space 600 mm (2') or more in width. Receptacles shall be coordinated with the furniture locations. Receptacles shall be mounted 450 mm (18") above finished floor, switches shall be mounted 1400 mm (55") above finished floor. Ground fault protection shall be provided where required by codes.
  - (d) Wiring shall consist of insulated copper conductors installed in rigid metallic conduit or metallic (EMT) tubing systems. Exposed emt is permitted only in unfinished areas and shall be installed a minimum of 1200 mm above the finish floor. Exposed conduit installed below 1200 mm above finished floor shall be rigid. Provide a green jacketed ground wire in all conduits.
  - (e) Switches and receptacles shall be rated 20A unless specified otherwise. Provide cast or stamped steel cover plates as appropriate for application.

- (f) Wiring, conduits, switches, disconnects and controllers shall be provided for all equipment requiring electrical power.
- (g) Motors. All motors shall be high efficiency types and use derated values for supply voltages, i.e., for a 480V service use a 460V rated motor; for 208V service provide a 200V motor. In addition, all motors should have a safety disconnect switch mounted in a clearly labeled and accessible location. Motors over 10 hp should have under-voltage, phase loss, and phase reversal protection. For induction motors 10 hp and larger provide power factor correction capacitors to correct power factor to 90.
- (h) Overhead coiling door controllers shall be located adjacent to the doors being controlled. Provide wiring per manufacturer's recommendations.
- (i) All electrical systems shall be grounded in accordance with National Electrical Code 250. (NFPA 70)

#### 3.5.4.1 Drop Site Industrial Complex

Provide power distribution center located in close proximity to the government provided and installed 208Y/120V transformer. This distribution center and transformer will be protected by a concrete earth bermed structure open on one end located approximately 500 feet off site.

The power distribution center will supply power underground feeders to branch circuit panels, strategically located in berms on the site, to accommodate 120 volt, 1500 watt, electric heaters that will be installed in each building. Each heater shall be supplied by one circuit. See electrical details. Each building type shall have the following quantities of heaters:

Buildings	"A" – 08 each
	"B" – 16 each
	"C" – 08 each
	"D" – 04 each
	"E" – 04 each
	"P" – 04 each
	"H", "F" & "G" – No heaters required

All wiring from the distribution center to the branch panels and from the branch panels to the electric heaters will be routed 914 mm (36") below grade.

Provide lightning protection grounding on each side of any access gates, animal pass gates, vehicle gates, personnel entry gates, corner braces and tensioning posts at all BLM fencing as per BLM fencing standards and NFPA- 780 requirements.

#### 3.5.4.1 S.A.M. Site

No electrical work on this site.

#### 3.5.4.3 Maintenance Complex

From the government provided and installed, 12.5 kV –208Y/120V transformer, install a power distribution system to handle the normal and standby power needs of the complex. This power



distribution center will consist of essential and non-essential power panels, two 125 kW generators, electronic circuit breakers, and controls as required to support the facility operation.

One generator shall provide emergency power to essential loads, i.e., fire pump and associated equipment, freeze protection, and circuits servicing the Radio Room.

Upon loss of normal power, this generator will start first. Once critical loads are satisfied by the first generator, the second generator will start and provide power to the remainder of the Maintenance Building (non-essential loads), with exception of welding, emitter, and maintenance outlets.

Should the generator supplying essential loads not start or malfunction, the second generator shall feed the essential loads in lieu of the non-essential loads.

Deliver two spare 125 kW 208Y/120V propane fueled generators to:

366 CES/CE CO  
Base Engineering  
Building 1300  
Mountain Home Air Force Base

Generators shall be delivered in weatherproof containers.

Provide power in the complex for interior and exterior lighting, parking lot lighting and controls, convenience receptacles, window shutters, HVAC equipment, fuel system pumps, pumps associated with potable water tanks and fire protection, electric heat, vehicle lift, air compressor, bridge crane, heat/smoke detectors and communications equipment.

Provide one 200-amp 208Y/120V 60 HZ welding receptacle, two 100 amp three phase 208Y/120V emitter outlets, one 208V, 60 amp, 3 phase 4 wire outlet for the parts washer and ten 20 amp, 120 V receptacles spaced evenly along the exterior wall at 48-inch center A.F.F., in addition to standard convenience outlets in the shop area.

Provide six duplex receptacles along the exterior wall, and 2 (EA) duplex receptacles on other three walls of the Radio Room. Exterior wall receptacles shall be two circuits wired alternately.

Provide one 100 amp, 250V, Nema 3R three phase disconnect along the south facility fence for emitter vehicle use. Connect 10 feet of 100 amp cord with 208 three phase 4 wire receptacle to load side of disconnect.

Provide a 6-inch sleeve 6 feet A.F.F. through exterior wall at radio room to antenna pad.

Provide lightning protection grounding at all chain link fencing as per NFPA- 780 requirements. Provide additional ground rods on each side of any access gates, animal pass gates, vehicle gates, personnel entry gates, and at corners and tensioning posts.

Provide lightning protection grounding on all metal buildings, fuel tanks and Communications Towers.

Provide 3" wide x ¼" thick copper ground bars at 44" center A.F.F., along entire length of all walls in the Communications Room, ESD Room and in the Shop Area.

Maintenance complex building shall be pre-wired for telephone and LAN lines. Termination of telephone lines shall be in the electrical/mechanical room on a 4' by 8' plywood telephone board. LAN lines shall terminate at the same location for future computer rack installation by others.

#### 3.5.4.3.1 Generator Building

The propane generator shall be sized to carry all critical loads required during extended power outages including 50 kW of electric heat.

The generator building will have normal power circuits for building heat and convenience power. Standby power will provide for generator building lights, one convenience outlet and generator control circuits.

#### 3.5.4.4 1/4 Acre Emitter Sites

Provide a ground reference point that has a maximum of 15 ohms resistance to ground at each site. Perform soil resistivity testing and provide ground rods or wells as required to achieve 15 ohms maximum resistance. Provide a grounding bar located in a below ground enclosure and ground rod or well system depending on soil conditions at each site. See drawing details.

#### 3.5.4.5 Drop Site Forward Edge Battle Array

No electrical work at this site.

#### 3.5.4.6 1 Acre Emitter Site Complex

Provide a ground reference point that has a maximum of 15 ohms resistance to ground at each mobile emitter hookup location. The one acre emitter sites, with exception of Sites BB and BK, will be supplied power from an on site prime power engine generator that will be located in a generator building, adjacent to the crew building. Provide a 125 kW propane fueled generator. Voltage shall be 208Y/120V.

Sites BB and BK will be powered from existing transformers, located on or adjacent to the site. Verify voltage with Idaho Power Company.

Electrical on these sites will include power for convenience outlets, interior lighting, exterior porch lights, HVAC systems, kitchen equipment, fueling stations, water heaters, power for water storage system pumps. Provide three 100 amp, 250V, Nema 3R three phase disconnects along the facility fence for emitter vehicle use. Connect 10 feet of 100 amp cord with 208 three phase 4 wire receptacle to load side of disconnect.

Provide 3" wide x ¼" thick copper ground bar along entire length of all walls in the work areas inside each crew building.

Provide lightning protection grounding at all chain link fencing in accordance with NFPA-780 requirements. Provide additional ground rods on each side of any access gates, animal pass gates, vehicle gates, personnel entry gates, and at corners and tensioning posts.

Provide lightning protection grounding at all communication towers, propane enclosures and fuel tanks in accordance with NFPA-780 requirements and manufacturer's recommendations.

Provide lightning protection grounding on all metal buildings.

#### 3.5.4.7 No Drop ND4 & ND5 Industrial Sites

Provide lightning protection grounding on all BLM fencing and at all propane enclosures as per BLM fencing standards and NFPA-780 requirements. Provide additional ground rods on each side of any access gates, animal pass gates, vehicle gates, personnel entry gates, and at corners and tensioning posts.

#### 3.5.4.8 No Drop Early Warning Site ND7

Provide lightning protection grounding at all BLM fencing, radar dishes and fuel tanks, as per NFPA-780 requirements. Provide additional ground rods on each side of any access gates, animal pass gates, vehicle gates, personnel entry gates, and at corners and tensioning posts.

#### 3.5.5 Lightning Protection

Lightning protection shall be provided in accordance with NFPA-780 – Lightning Protection Code. Provide protection as enumerated.

END OF SECTION

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## SECTION 00890

## OUTLINE SPECIFICATIONS

## 1. GENERAL

These outline specifications cover the range of products/work to be included in the project. The goals are: a) to indicate the areas of work in the project; b) to broadly indicate the work within each section, and c) to indicate minimum acceptable requirements. These outline specifications do not attempt to address product approval, shop drawings, or actual installation.

Products/work not included in these outline specifications shall be provided in accordance with recognized industry practice for facilities of the type being provided.

This project shall be 100 percent asbestos free. No asbestos or asbestos containing materials in any amounts will be allowed.

## 2. SPECIFICATIONS

The proposer/Contractor may either use recognized industry sources of specifications or specifications obtained from the CENWS Internet home page (<http://www.nws.usace.army.mil>) unless noted otherwise.

## DIVISION 2 – SITEWORK

## 02220 Demolition

This guide specification covers the requirements for demolition and removal of resulting debris except as modified herein. Section 01061 Environmental Protection recommendations for construction operations apply to all demolition operations under this contract. All salvage material shall remain the property of the Government.

## 02300 Earthwork

This guide specification covers the requirements for excavation, embankment, preparation of subgrade and grading for roadways and gravel parking areas including excavation, filling and shaping of drainage ways, except as modified herein. The upper 150-mm (6 inches) of subgrade material in roadway and gravel parking areas shall be compacted to a minimum of 90% relative compaction. Topsoil shall be stripped to a minimum depth of 150-mm (6 inches) and spread across approved areas on-site. All work shall be in compliance with the Geotechnical Report (Appendix C).

The Contractor shall minimize the impact to the existing landscape by blending the individual sites with the surrounding landscape, with a minimum amount of earthwork.

## 02315 Excavation, Filling, and Backfilling for Buildings

Provide excavation, filling, backfilling, compacting, and finished grading necessary to construct the finish grades indicated for structures and other on-grade slabs. All work shall be in compliance with the Geotechnical Report. (Appendix C)

## 02316 Excavation, Trenching and Backfilling for Utility Systems

Excavating, preparation of pipe-laying surface, pipe bedding, backfilling and compaction, requirements for underground mechanical and electrical work, installation of marking tape for identification and delectability to the points of connection within 1.5 m (5 feet)

of the buildings. All related work shall be in compliance with the Geotechnical Report. (Appendix C)

#### 02506 Gravel Wearing Course

This guide specification covers the requirements for wearing course for access roads and gravel parking areas, except as modified herein. All work shall be in compliance with the Geotechnical Report (Appendix C). The underlying course shall conform to Section 02300 Earthwork. The surface of the top layer shall not deviate more than 19 mm (3/4") when tested with a 3m (10 foot) straightedge applied parallel with and at right angles to the road centerline. The wearing course shall be compacted to at least 95% relative compaction. The material requirements are as follows:

<u>Sieve Size</u>	<u>Percent by Weight Passing</u>
63 mm (2 1/2")	100
50 mm (2")	90-100
25.4 mm (1")	55-83
4.75 mm (No. 4)	30-60
0.600 mm (No. 30)	10-25
0.075 mm (No. 200)	5-10

#### 02510 Water Distribution Systems

This guide specification covers the requirements for water supply, distribution, and service lines and connections to building service at a point approximately 1.5 m (5 feet) outside buildings and structures to which service is required except as modified herein.

#### 02520 Water Storage Tanks

The guide specification covers the requirement for welded steel and bolted steel water storage tanks and shall be in accordance with the American Water Works Association (AWWA) Standards, Section D. All work associated with potable water shall meet AWWA and NSF. All work associated with fire protection water shall meet AWWA and NFPA. The water storage tanks and accessories shall be insulated to prevent freezing water. The insulation shall consist of closed cell urethane (minimum R-value 10) with aluminum protective covering. The protective covering shall be Desert Beige.

#### 02530 Sewer Septic Drain Field System

The guide specifications for the installation of a sewer septic drain field system shall be the Technical Guidance Manual provided by the Health Department of the State of Idaho. The system shall be installed according to the pipe manufacturer's recommendations and in accordance with the Southwest District Health Department. The design parameters within the Geotechnical Report (Appendix C) shall also be used at the Maintenance Complex.

#### 02630 Storm Drainage System

This guide specification covers the requirements for storm drainage piping systems using concrete, clay, steel, ductile iron, aluminum, polyvinyl chloride (PVC), and polyethylene (PE) pipe, except as modified herein.

#### 02821 Fencing (Chain-Link)

Chain-Link fencing and gates to be industrial (Schedule 40) commercial quality all hot-dip galvanized steel. Chain-link fencing to be 8' high (6' chain with 45 degree arm, (3) barbed wire strands at top). Swing gate type shall be industrial type complying with

ASTM F 900 for single and double gates made from galvanized steel. Industrial horizontal rolling gates complying with ASTM F 1184 shall be equivalent to type II cantilever rolling, class I with external roller assembly. Front wheels of assembly of rolling gates shall be equivalent to 4.8 inch tire with 8" center (wheelbarrow type wheels) to allow gate to roll easy in inclement weather. BLM type fencing to consist of metal T-Post (at 5'6" (1.68 mm) above grade) 125#/ft and four wire strands (top three to be barbed and bottom wire to be slick). BLM type fencing shall have metal corner and gate post and metal bracing at the Juniper Butte sites. Fences at gates, corner post and tension post, to be grounded for lightening protection. Chain-link mesh shall be 2-inch mesh, 9 gauge, zinc coated. Fabricate all gates with latches with provision for chain and/or padlocking. Barbed wire shall be ASTM A21, galvanized steel, 12 gauge, 4 points at 5 inches o/c. Slick wire shall be ASTM A21 12 gauge.

#### 02921 Seeding

All site areas where indicated to have reseeded topsoil berm, and cut and fill slopes and all areas disturbed under the contract(s) shall be reseeded. Seeding method shall be hydroseeding. Seed mix shall be as follows:

<u>Seed Mixture</u>	<u>Hydromulched</u>
Bottlebrush squirrel tail grass (Sitanion hystrix)	2.0 lb./acre pure live seed
Sandberg bluegrass (Poa sandbergii)	1.0 lb./acre pure live seed
Wyoming sagebrush (Artemisia tridentata "wyomingensis")	0.25 lb./acre pure live seed
Bluebunch wheatgrass (Agropyron spicatum)	7.0 lb./acre pure live seed
Gooseberry Leaf globemallow (Sphaeralcea grossulariaefolia)	0.5 lb./acre pure live seed

Total seed mixture will be 10.75 lb./acre of pure live seed. Seeding should occur from September 15 to December 15 of any given year.

Topsoil shall be the existing surface soil stripped and stockpiled on site, and respread evenly and firmly prior to seeding. Wood cellulose fiber mulch shall not contain any growth or germination-inhibiting factors and shall be dyed an appropriate color to facilitate placement during application. Composition on air-dry weight basis: 9 to 15 percent moisture, pH range from 4.5 to 6.0.

If seeding has not obtained established growth after six (6) months from date of initial seeding, the Contractor shall re-seed the area(s). Established shall mean no bare spots larger than 12 inches.

## DIVISION 3 – CONCRETE

03100 Structural Concrete Formwork  
See 03300.

03150 Expansion Joints and Contraction Joints  
See 03300.

03200 Concrete Reinforcement  
See 03300

03300 Cast-in-Place Structural Concrete  
Admixtures and curing compounds shall require approval (admixtures containing chlorides shall not be used). At exposed floor slabs, provide approved non-metallic hardener/sealer. Provide curing compounds at slabs. No cone ends shall occur on faces of concrete in exposed-to-view surfaces. Chamfer all external corners. Furnished formwork in largest practical sizes to minimize number of joints. At floor slabs, provide a 4" to 6" thick capillary water barrier, gravel/sand base beneath slabs with a 6-mill vapor barrier at mid-depth. Provide reinforcing mesh in all slabs. All slabs to be 4" thick, except 6" at shop areas. All concrete shall have a comprehensive strength of 20 Mpa (3,000 psi) except shop at maintenance building shall have 26.6 Mpa 4,000psi). Prepare design mixes for each type of concrete in accordance with applicable provisions of ASTM C94 and AC1301.

Require the use of insulating blankets in conjunction with other approved curing methods to reduce temperature variations and rapid moisture evaporation due to dry winds during the curing period.

Provide construction and contraction joints per ACI manual, with no slabs that have a side greater than 12.5 ft. Provide joint location layouts for approval showing sawed control (contraction) joints and construction joints. Include details for joints, and joints around bollards and pipe guardrail.

Fuel containment concrete pads shall be constructed without joints to eliminate leakage into the ground.

Support reinforcement with approved chairs, spacers or ties. Reinforcement for slabs-on-grade shall be adequately supported so that the reinforcing remains in the top half of the slab. Provide reinforcement at all joint angles less than 90-degrees, at all re-entrant corners, and discontinuous joints.

All exterior concrete slabs shall have a non-slip (light broom) finish.

## DIVISION 4 – MASONRY

04200 Masonry  
Exterior units shall be split-faced (one-side) concrete masonry units in accordance with ASTM C90. All CMU units and mortar shall receive an integral water-repellent admixture. Mortar for exterior units shall have integral color to match split-faced CMU. Interior units shall be standard type concrete masonry units in accordance with ASTM C90. Strength of all CMU shall be F'M = 1900 psi (13.1 Mpa) lightweight clarification.



Mortar materials shall comply with Type S rating. All concrete masonry walls shall be designed to withstand seismic forces as required by UBC Code Standards. Provide control and expansion joints strips and insulation. Tool finish exposed joints to a dense concave surface or other acceptable weather joint. Clean masonry with cleaners approved by unit masonry manufacturer and complying with masonry manufacturer's directions and technical bulletins. Remove all cleaner residues from masonry.

Reinforced Masonry: Steel producer's mill certificate will be required. Provide temporary formwork and shores for support of reinforced masonry elements. Shop drawings for reinforcement steel required.

## DIVISION 5 – METALS

### 05090 Welding, Structural

All welds exposed in finish work around doorways shall be ground smooth. Defective or rejected welds shall be cut out and replaced. All welding shall comply with AWS Code.

### 05120 Structural Steel

Provide mill analysis and test reports. A testing laboratory shall be used for all required tests and inspections. The structural steel fabricator shall have a valid AISC Quality Certification Category I. Materials shall comply with the following criteria: Structural Steel Shapes – Wide Flange Sections: ASTM A 992, Grade 50 KSI; All Other Structural Steel Shapes, Plates, and Bars: ASTM A 36; Cold-formed Steel Tubing: ASTM A 500, Grade B; Steel Pipe: ASTM A 53, Type E or S, Grade B; Unfinished Threaded Fasteners: ASTM A 307, Grade A; High-Strength Threaded Fasteners: Heavy hexagon structural bolts, heavy hexagon nuts, and hardened washers, as follows: Quenched and tempered medium-carbon steel bolts, nuts, and washers, complying with ASTM A 325.

### 05210 Steel Joists and Joist Girders

All joist and joist girders shall comply with Steel Joist Institute Specifications for Fabrication and Installation. Manufacturer's certification required. Provide all accessories, extended and special ends and ceiling extensions as required. Do not apply construction loads until bridging and anchorages are completed.

### 05300 Steel Decking

Steel Floor and Roof Deck: Provide fire resistance label as required. Codes and Standards: Comply with provisions of the following codes and standards, except as otherwise shown or specified: AISI "Specification for the Design of Cold-Formed Steel Structural Member," AWS D1-1 "Structural Welding Code-Sheet Steel," SDI "Design Manual for Floor Decks and Roof Decks." Qualification of Field Welding: Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure." Touch-up shop paint after installation. Clean field welds and abraded areas. Recommended decking is 1 ½ "type B.

### 05500 Miscellaneous Metal

Welds to be continuous, ground smooth and flush. Exposed joints to be "hairline" quality. Miscellaneous metals can include the following: steel shutters, gratings, shelf angles, supporting deck angles, ladders, pipe sleeves, pipe post guards, corner guards, jambs, backing for doors and bollards. Separate miscellaneous metal from dissimilar metals and from products containing lime or other substances, which will cause damage (galvanized corrosion) to occur. Treads and platforms of steel stairs shall support a

uniform load of 5 kPa (100 psf) or a concentrated load of 136 kg (300 pounds) (placed in a position to cause maximum stress), and are to be non-slip. Window shutters to be constructed of ¼ inch thick steel plate, hinged with appropriate heavy-duty hinges and provisions for padlocking shutters. Shutters to be similar to those at the Grasmere site.

## DIVISION 6 – WOOD AND PLASTICS

### 06100 Rough Carpentry

All lumber in contact with concrete or masonry shall be preservative treated. Lumber shall be minimum No. 2 grade.

### 06200 Finish Carpentry

Back paint all millwork or cabinetwork. Exposed joints to be “hairline” quality. Backing and anchorage for cabinet work and shelving to meet all applicable code requirements for overturning and seismic forces. Finish carpentry can include the following: trim, shelving, bases, cabinetwork, etc. Cabinetwork can include open shelving, counters storage, shelving units, etc.

## DIVISION 7 – THERMAL AND MOISTURE PROTECTION

### 07110 Bituminous Dampproofing:

Product Data: Provide at exterior foundation walls of maintenance facility and one acre emitter building. Submit manufacturer's technical product data, installation instructions and recommendations for each dampproofing material required.

### 07190 Water Repellents

Provide water repellent to all exterior masonry surfaces and interior unpainted masonry surfaces. Repellent shall be either a clear silanes or siloxanes, applied per manufacturer's recommendations.

### 07220 Insulation for Roofing and Walls

Provide “R” value as specified by energy design calculations. Provide insulation to meet performance requirements, including flame and smoke spread characteristics. Comply with insulation manufacturer's instructions for installation of insulation. Provide rigid or batt insulation as appropriate for application. Exposed exterior CMU walls shall be filled with loose insulation.

### 07412 Non-Structural Metal Roofing (Standing Seam)

Panels and components shall be the products of a single manufacturer who has at least 5 years experience in manufacturing the proposed system and has been involved in at least 5 projects similar in size and complexity to this project. Wind uplift loading shall meet Underwriters Laboratories wind uplift Class 90 rating. Minimum slopes for roofs shall be as required for proposed roofing and compatible with adjacent building roof slopes. Provide snow guards and lightning protection.

Steel Panels shall be zinc coated steel conforming to ASTM A 446, G 90 coating, minimum 0.7 mm (24 gauge), seam spacing shall be 400 mm (16”) maximum and rib height of 43.75 mm (1¾) maximum.

Panels shall have a factory color finish. Exterior finish shall be one of the following: (a) 0.0762 mm (3 mil) epoxy base coat and a 0.0508 mm (2 mil) urethane finish coat or

0.0762 mm (3.0 mil) epoxy base coat and 0.02032 mm (0.8 mil) PVF2, 70 percent Kynar finish coat; or (b) a nonmetallic four coat PVF2 70 percent Kynar with a nominal 0.05588 mm (2.2 mil) thickness; or (c) minimum 0.01016 mm (0.4 mil) epoxy base coat, minimum 0.0254 mm (1.0 mil) urethane, another minimum 0.0254 mm (1.0 mil) urethane, and minimum 0.02032 mm (0.8 mil) PVFz, 70 percent Kynar finish. Colors shall be as specified in Section 00860, paragraph 3.2.3 Finishes.

Manufacturer's Representative: A representative of the SSMRS manufacturer, who is familiar with the design of the roof system supplied and experienced in the erection of roof systems similar in size to the one required under this contract, shall be present at the job site during entire installation of the SSMRS to assure that the roof system meets the specified requirements. The manufacturer's representative shall be either an employee of the manufacturer with at least two years experience in installing the roof system or an employee of an independent installer that is certified by the SSMRS manufacturer to have 2 years of experience installing similar roof systems.

Installer: The installer shall have a minimum of 2 years experience and shall have been involved in installing at least 3 projects that are of comparable size, scope and complexity as this project for the particular roof system furnished and shall be certified by the SSMRS manufacturer.

Warranties: The Standing Seam Metal Roofing System shall be warranted as outlined below against water leaks, and deficient materials arising out of or caused by ordinary wear and tear by the elements at the site.

Contractor's Weathertightness Warranty: The Standing Seam Metal Roofing System shall be warranted by the Contractor for a period of 20 years against water leakage. The Standing Seam Metal Roofing System covered under this warranty shall include the entire roofing system including, but not limited to, the following: panel seams and joint, all accessories, components and trim; Penetrations such as vents, curbs, and skylights; interior or exterior gutters and downspouts; eaves, ridge, hip, valley, rake, gable, wall, or other roof system flashings installed to provide a weathertight roof system; and items specified in other sections of these specifications that become part of the standing seam metal roofing system. All leaks shall be repaired as approved by the Contracting Officer. This warranty shall warrant and cover the entire cost of repair or replacement, including all material, labor, and related markups. The Contractor may supplement this warranty with written warranties from the installer and/or manufacturer, which shall be submitted along with Contractor's warranty; however, the Contractor is ultimately responsible for this warranty. The Contractor's written warranty shall start upon final acceptance of the facility or the date the Government takes possession, whichever is earlier. It is understood that the Contractor's Performance Bond shall remain effective throughout the 5 year Contractor's warranty period for the entire metal roof system as outlined above.

Manufacturer's Material Warranties: The Contractor shall furnish, in writing, the following manufacturer's material warranties which cover all Standing Seam Metal Roofing System Components such as roof panels, flashing, accessories, and trim, fabricated from coil material:

A. A manufacturer's 20-year material warranty warranting that the aluminum, zinc-coated steel, aluminum-zinc alloy coated steel or aluminum-coated steel as

specified herein will not rupture, fail structurally, or perforate under normal atmospheric conditions at the site. Liability under this warranty shall be limited exclusively to the cost of either repairing or replacing nonconforming, ruptured, perforated, or structurally failed coil material.

B. A manufacturer's 20-year exterior material finish warranty warranting that the factory color finish, under normal atmospheric conditions at the site, will not crack, peel, or delaminate; chalk in excess of a numerical rating of 8 when measured in accordance with ASTM D4214; or fade or change colors in excess of 5 NBS units as measured in accordance with ASTM D 2244. Liability under this warranty is exclusively limited to refinishing or replacing the defective coated coil material.

#### 07600 Sheet Metalwork, General

Sheet metalwork can include the following: Metal flashing and counter flashing, gutters, downspouts (rain drainage), and trim and sheet metal expansion joints. Separate flashing and sheet metal from dissimilar metals and other construction materials, which will cause galvanic corrosion to occur. Fabricate architectural sheet metal to comply with the recommendations of SMACNA's Architectural Sheet Metal Manual.

Louvers and Vents: Shall be pre-coated aluminum louvers/vents with high performance finish (20-year finish warranty). Louvers shall be drainable fixed and/or drainable operating (manual), insulated or acoustical. All louvers to have insulated blank-off option. Provided with fire dampers and insect screens.

#### 07840 Firestopping

Install firestopping, type and location as required by the Uniform Building Code.

#### 07900 Joint Sealants

Provide certified test reports for caulking and sealants. Provide caulking and sealants that are compatible with one another and with adjoining substrates. Color shall match adjacent finish colors. Exteriors sealants and sealants in interior wet areas shall be silicone or polyurethane sealants certified to provide the minimum joint movement characteristics required by the joint design. Provide fire-stopping sealant where required. Provide sealant backings (nonstaining, compatible with joint substrates sealants, primers and other joint fillers approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

### DIVISION 8 – DOORS AND WINDOWS

#### 08110 Steel Doors and Frames

Interior Doors: Commercial grade, heavy duty with 18 gauge (1.3 mm) faces and 16 gauge (1.6 mm) frames.

Exterior Doors: Commercial grade, insulated, extra heavy duty with 18 gauge (1.3 mm) faces and 16 (1.6 mm) gauge frames and full weather-stripping.

Labeled Openings: Where labeled openings occur, coordination is required for labeled assembly (door, frame, and hardware), not merely labeled items within the assembly. Doors and frames shall bear the specific labels for the rated openings.

**08220 Aluminum Windows**

Design Requirements: Comply with air infiltration, water penetration, and structural performance requirements. Provide fixed units, weepholes, thermal break construction and clear heavy anodized finish. Provide hopper type windows at lookout room of maintenance building. Minimum 10-year warranty by manufacturer. Stock sizes shall be used to maximum extent. Avoid placing windows adjacent to doors where broken windows give access to door operating hardware.

**08330 Overhead Rolling Doors (Maintenance Building – Shop Room)**

Doors shall be complete with guides, fastenings, hood, counterbalance, brackets, operating mechanisms and accessories. Doors shall be surface mounted type with guides at jambs set back a sufficient distance to clear opening. Slats, guides and other exposed ferrous surfaces shall be zinc coated. Slats shall be factory finish painted; color shall be specified in Section 00860. Curtains at exterior doors shall be constructed with flat type steel slats at exterior and interior surfaces of not less than 1 mm thick (20 gauge) for doors at 4880 mm (16 foot) wide openings and not less than 1.3 mm thick (18 gauge) for doors at 6100 mm (20 foot) wide openings. Doors shall be insulated with foam insulation. Provide endlocks and windlocks, steel guides not less than 4.75 mm (3/16 inch) thick, bottom bars consisting of tow steel angles, full weather-stripping with weather baffle at lintel or inside hood for exterior doors and a combination compressible weather seal and safety device at the bottom bar. Operators shall be electric power with auxiliary chain hoist operation.

**08331 Metal Rolling Counter Doors (Lookout Windows)**

Doors shall be mounted on the exterior with operation switch for doors mounted within the interior. Doors shall be complete with curtain, bottom bars, guides, fasteners, hood, counterbalance, brackets, operating mechanisms and accessories. Doors shall be surface mounted type with guides at jambs set back a sufficient distance to clear openings. Door curtain shall be constructed of interconnected strip steel slats conforming to ASTM 526, hot dipped galvanized G-90 coating. Curtain shall be 22 gauge No. 10 (1¼" high X 3/8" deep) slats. Curtain shall be factory finish painted; color shall be specified in Section 00860. Doors shall be operable by a tubular motor that fits inside the door barrel. The motor shall be protected for exterior (weather) installation.

**08360 Sectional Overhead Doors (at ND-4 and ND-5)**

Doors shall be complete with 2" tracks, track support brackets, torsion spring counterbalance, weatherseals, rollers, push/pull handles, slide bolt, exterior locking mechanism and accessories. Doors shall be manual push-up operated, standard residential type garage doors. Doors to be non-insulated type of 24-gauge (0.7 mm) steel with exterior faces ribbed, grooved, or fluted. Construct door sections from galvanized, structural-quality carbon steel sheets complying with ASTM A 653 (ASTM A 653M) with a minimum yield strength of 33,000 psi (225 Mpa) and minimum G60 (Z 180) zinc coating. Design and reinforce doors to withstand a 20 psf (950 Pa) wind-loading pressure. Finish doors with manufacturer's standard prime coat, ready for painting.

**08700 Hardware; Builders' (General Purpose)**

Comply with all ANSI and DHI requirements for commercial grade, heavy-duty high security hardware, and with NFPA requirements for fire and life safety. Lock cylinders shall be key removable and shall be compatible with the locking system manufactured by Best Lock Corp. (seven pin "Best – R" Keyway cores). Contractor shall provide all doors locking hardware to match the current base locking system and install construction

cores necessary to secure the building during construction. Prior to final inspection for acceptance by user the Government will furnish cores and keys to the Contractor for installation. The Contractor shall arrange and pay for installation of the Government furnished cores by a bonded agent. Installation shall be as directed by the base lock shop. Height of the hardware shall be industry standard. Hardware to include hinges (4 ½" minimum, heavy-duty with NR Pin at exterior doors), pivots, locks, latches, strikes, coordinators, bolts stops, astragals, thresholds and weather-stripping as appropriate. Hardware finish shall be 626 satin chrome for all hardware (i.e. hinges, door closures, locksets, etc.) on all interior and exterior doors. Design/build contractor to provide Best rekeyable core padlocks for each gate, window shutter, propane enclosure, fuel tank, etc. Contractor to also provide forty (40) extra padlocks to be delivered to the Mountain Home Air Force Base locksmith with written notification to the Contracting Officer.

#### 08810 Glass and Glazing

Exterior windows glazing to be double pane, clear, insulating glass. Wire glass shall be used at fire-rated assemblies. Glazed openings that are subject to accidental human impact and at all hazardous locations shall be glazed with tempered glass, wire glass, laminated safety glass as appropriate.

### DIVISION 9 – FINISHES

All interior finishes shall comply with MIL-HDBK-1008C requirements for smoke developed and flame spread rating.

#### 09250 Gypsum Wallboard

Gypsum wallboard to be minimum 16 mm (5/8 inch) in thickness. All wet areas shall receive water resistant type gypsum wallboard. Provide work with fire resistance ratings conforming to assemblies tested and listed by recognized authorities. Interior partitions to be of metal steel construction. Finish on interior painted gypsum wallboard to be light orange peel. All gypsum wall board to be painted unless otherwise noted.

#### 09310 Ceramic Tile

Floor tile to have slip resistant abrasive or textured surface, chemical and corrosion resistant, non-porous with low-absorption characteristics. Floor tile to be mortar bed set. Thin set shall not be acceptable. Grout to be ANSI A 118.6: latex-portland cement grout (commercial), a pre-blended compound of portland cement, selected and graded aggregates, color pigments and chemical additives gauged with latex grout additive to make water-resistant grout joints. Slope all tile floors 10 mm per meter (1/8 inch per foot) to floor drains. Wall tile to be glazed tile installed over cementitious backer board. Provide installation, expansion, control, contraction and isolation joints in accordance with TCA standards. Provide ceramic tile soap dish at showers. Shower receptor shall be size (6) inches high precast terrazzo receptor composed of black and white marble chips and white cement with non-slip floor surface. Fabricate with integrally cast waste connection, and rabbited groove at curb.

#### 09650 Resilient Flooring

Flooring to meet heavy-duty requirements for layer gauge, indentation, flexibility, solvent and stain resistance. Provide 12" x 12" x 1/8" (304.8 mm x 304.8 mm x 3.2 mm) VCT and Type II sheet vinyl with backing. Provide 100 mm (4 inch) high wall base with cove toe of rubber or vinyl in continuous rolls.

**09680 Carpet**

Carpet classification is to be for severe use. Carpet is to be glue-down, wall-to-wall only. Provide scotch guard or equal finish treatment for all carpeting. Carpet shall be provided with patterns or textures that will not readily show dirt or stains.

**09900 Painting, General**

All exposed surfaces shall be painted (two coats, plus primer) unless specified otherwise. Factory-finished surfaces are excepted unless specified otherwise. Exterior paint for metal surfaces shall be alkylid gloss enamel. Interior surfaces shall receive semi-gloss low luster latex enamel except for maintenance areas, which are to receive gloss latex enamel. Paint systems shall conform to the Architectural Specification Manual of Specification Services, Inc. custom quality. The shop ceiling of the maintenance facility shall be painted with the two coats dryfall type paint. All exposed surfaces and materials at the interior of the non-habitable buildings shall be prime painted coated.

**DIVISION 10 – SPECIALTIES****10160 Toilet Partitions**

Provide overhead braced and floor anchored metal toilet compartment and wall hung screens. Electrolytically zinc coated steel sheet complying with ASTM A591, Class C. Manufacturer's standard sound-deadening honeycomb core material. Doors to be equipped with hinges, latch and keeper, coat hook, door bumper and door pull. A single manufacturer shall provide toilet partition system. Color shall be specified in Section 00860.

**10270 Raised Floor System**

Provide raised floor system (access flooring), with structural performance per CISC/AF Section I. Floor panels shall be capable of supporting a concentrated design load of 1,000 lbf (4448 N), axial load of 5,000 lbf (22.24 kN), overturning movement of 1,000 lbf x inch (113 N x m) and ultimate-load performance factor of two. Provide flooring system capable of withstanding lateral forces of magnitude for seismic Zone 2. Static floor covering resistance of not less than 150,000 ohms, nor more than 20,000 megohms. Nominal panel size 24" x 24" (610 x 610 mm). Floor panel covering to be applied vinyl conductive tile. Pedestals to be manufacturer's standard adjustable with head to support system. Stringer system shall be modular stringer system interlocking with pedestal heads to form grid pattern. Provide cutouts in floor panels for cable penetrations and service outlets. Install flooring system to comply with manufacturer's installation instructions.

**10430 Exterior Signage**

Provide and install exterior signage as described in Section 00860-II, paragraph 3.2.3.4. Aluminum sheet or plate, alloy and temper for type use with at least the strength and durability properties specified in ASTM B209 for 5005-H-15 alloy. Panels material shall be 1/16-inch thick minimum aluminum with square cut edges. Signs to be installed with pop rivets (2) on 1 1/2" x 1 1/2" aluminum angle iron, 8'-0" in length and 5'-0" from centerline of sign to ground levels or mechanically installed to fence. Coordinate installation and location with Government Contracting Officer.

**10505 Lockers**

Lockers to be constructed of sheet steel, 16-gauge top and bottom, 18 gauge back and 16 gauge doors. Include all anchorage and accessory items. Lockers to be 12" x 15" x 72" (300mm x 380mm x 1820mm). Provide with stainless steel recessed handle to accommodate any standard padlock, double prong ceiling hook, shelf and minimum 2 single prong hooks, and sloped tops. Finish to be manufacturer's standard shop applied enamel finish.

**10520 Fire Extinguisher Cabinets and Accessories**

Die-formed steel cabinets, trims and doorframes, with factory finish of baked enamel, semi-recessed style with rolled return trim and full clear break-plastic door panels. Unfinished areas may be provided with appropriate mounting brackets for the extinguishers. Extinguishers will be provided by the Government.

**10800 Toilet Accessories**

Accessories to be stainless steel and semi-recessed as applicable. In restrooms/toilets: Provide soap dispenser, mirror, toilet paper dispenser, folded paper towel dispenser, paper towel receptacle, seat cover dispenser, sanitary napkin dispenser with disposal, and grab bars at the toilet and shower of maintenance building. Shower Rooms: Provide robe hook, and one towel bar a minimum of 610-mm (24 inches) long. In janitor room of maintenance building and mechanical room of emitter buildings provide mop racks and shelf.

**10850 Miscellaneous Specialties**

Shower Door: Provide and install at shower a glass shower door with aluminum frame. Glass to be obscured safety glass. Door to be equipped with drip sill trim.

Bird Balls (bid item): Provide and install at existing reservoir/pond a bird ball system. Balls shall be 4" to 4 1/2" in diameter and spaced at 8 to 10 balls per square foot. Balls system shall be equivalent to that distributed by Coastal Netting of Bakersfield, California or Wildlife Control.

Bird Spikes: Provide and install at roof perimeter and ridge of buildings at ND4, ND5, radar units and buildings at ND7 and at all emitter site buildings. Spikes to be polycarbonate type, transparent, flexible and environmentally safe and non-lethal. Spikes to be nailed or screwed to structure. Product shall be equivalent to Bird-X-Spikes, Standard Spikes, as distributed by Bio-Control Network. ([www.biconet.com](http://www.biconet.com))

**DIVISION 11 (Not Used)****DIVISION 12 – FURNISHINGS****12320 Cabinet and Countertops**

Standard manufactured components to include base cabinets, wall cabinets, storage cabinets, shelf units, and counter tops. All casework shall be factory prefinished and furnished by one manufacturer. All casework shall conform to AWI custom grade, flush overlay with plastic laminated on all exposed surfaces. Hinges to be commercial grade. For laminated surface cabinets all fronts shall be edge-banded with 3-mm (1/8-inch) thick PVC edgebanding. High-pressure grade laminate at all exposed surfaces. Horizontal work surfaces laminated to particleboard substrate, 722 – 770 kg per cubic



meter (45-48 pounds per cubic foot), with integrally covered backsplashes and drip edge. Drawer slides shall be full extension. Cabinets to be structural test certified.

## DIVISION 13 – SPECIAL CONSTRUCTION

### 13080 Seismic Protection

Provide seismic protection for architectural, mechanical, and electrical systems and equipment for seismic zone 2B.

### 13211 Pressure Vessels for Storage of Compressed Gas

Pressure vessels shall comply with applicable standards of ASTM and ASME. A nameplate shall be used on vessels except when stamping directly applied.

Piping for manifolds shall be seamless black steel suitable for service and pressure through temperature range.

Fittings for manifolds shall be seamless butt-welded or socket-weld type. Vessels shall be constructed of steels, which meet the requirements for design pressures, and temperatures. Vessels shall be designed for a pressure of 1725 kPa (250 psig). Temperature range shall be plus 49° C. to minus 40° C.

Nozzles or outlets shall have a minimum diameter of 50-mm (2 inches). Multiple vessel assemblies shall be manifold together to furnish required gaseous-storage volume. All vessels shall be provided with protective pressure relief devices.

### 13121 Metal Building Systems

Provide a complete, integrated set of metal building system manufacturer's standard mutually dependent components and assemblies that from a metal building system capable of withstanding structural and other loads, thermally induced movement, and exposure to the weather without failure or infiltration of water into building interior. Include primary and secondary framing, roof and wall panels, and accessories complying with requirements for installation.

Engineer metal building systems according to procedures in MBMA's "Low Rise Building Systems Manual."

Provide roof panel assemblies that meet requirements of UL 580 for class 90 wind-uplift resistance.

Provide metal building roof and wall panel system that allow for thermal movement resulting from maximum change (range) in ambient and surface temperatures.

Design and engineer metal building systems capable of withstanding the effects of earthquake motion determined according to UBC for zone 2B.

The metal building system shall be provided by a single manufacturer and be the product of a recognized steel building system manufacturer, who has been in the practice of manufacturing steel buildings for a period not less than five years.

The installer shall have specialized experience in the erection of steel buildings for a period of at least three years. The erector shall furnish temporary guys and bracing

where needed for squaring, plumbing, and securing the structural framing against loads acting on the exposed framing, such as wind loads and seismic forces, as well as loads due to erection equipment and erection operation.

Material Warranty: Provide written warranty executed by manufacturer agreeing to repair or replace roof and wall panels that fail in materials or workmanship within five years of Final Inspection.

Rigid clear span on modular frames: L-shaped from sections fabricated from shop-welded, built-up steel plates or structural-steel shapes. Provide interior columns, where required for span, from round steel pipe or tube, or shop-welded, built-up steel plates. Frame configuration: Basically single gable, with exterior column type of uniform depth or tapered and rafter type of uniform depth or rafter type.

Secondary framing of C or Z shaped section for purlins and girts. Provide flush frame girts.

Endwall Framing – Manufacturer's standard for building not to be expandable.

Provide bracing as required to meet structural, wind and snow load requirements.

The buildings at the Industrial Drop site (Juniper Butte) shall be structurally designed and constructed to the extent that a damaged member by a training ordinance will not cause the buildings structure to collapse.

Roof and wall panels to be 25 gauge, 0.0239 inch (0.60 mm) corrugated metal panels with exposed fasteners. Exterior wall system, manufacturer's standard field assembled uninsulated panels. Provide panels primed for field painting.

Metal buildings shall have grounding and lightning protection.

#### 13202 Above Ground Vehicle Fuel Storage Systems

Vehicle fuel storage tanks shall include above ground tanks and accessories for the storage of unleaded and diesel fuel, used for vehicle refueling only. All design and installation shall conform to NFPA Chapters 30 and 30A, current industry standards and all pertinent Federal, State and Local requirements.

The primary storage tank and fully enclosed secondary containment reservoir shall be constructed of welded steel conforming to UL 142. The containment reservoir shall be equipped with a 3-inch drain, steel drain line and full size plug valve. Tank shall be provided with tank cleanout and gauge connection, atmospheric vent in accordance with UL 142, rupture disk emergency vent, fill caps/lids, sight glasses and fuel dispensing nozzles with hose.

All tanks and nozzles shall be clearly identified per industry standards to indicate the type of fuel stored.

Elevated tanks shall be provided with factory-engineered and fabricated structure, complete with ladder(s), guardrail and elevated walkway. Gravity operated nozzles shall be provided with elevated tanks and crank operated tanks shall be provided with grade level tanks. All tanks shall be mounted on secondary concrete basin.

## DIVISION 14 - CONVEYING SYSTEMS

### 14450 Vehicles Lift

Environmentally safe aboveground two post vehicle lift capable to lift light and medium size trucks with 10,000 pound (4,555 Kg) lifting capacity. Lift shall pass rigid compliance testing to ANSI B 153.1. Lift shall incorporate all position mechanical safety locks, infinite position hydraulic safeties and truck adapters. Carriages shall ride on sealed self-lubricating steel ball bearing rollers. Lift shall be self-contained including hydraulic systems, reinforced columns, automatic arm restraints, motors, safety locks, cylinders, carriages and anchoring system. Lifting height shall be 6 feet. Provide full five-year warranty and lifetime cylinder warranty.

### 14630 Overhead Electric Traveling Crane and Hoists

The electric overhead crane and hoists shall be designed and manufactured by a company with a minimum of 10 years experience in designing and manufacturing the type of equipment proposed.

Provide two runway, single girder overhead traveling bridge crane, 2.25 metric ton (2.5 ton) capacity, complete with motors, controls and assemblies for installation.

Manufacturer's qualifications: Engage a firm experienced in manufacturing crane assemblies similar to that indicated for this Project and with a record of successful in-service performance and a comprehensive inventory of replacement parts. Engage a fabricator who utilizes a qualified professional engineer to prepare calculations, shop drawings and other structural data for crane connections.

Installer Qualifications: Engage an experienced installer who has at least three years experience and has completed at least five crane projects similar in material, scope, design and extent to that indicated for this Project and with a record of successful in-service performance.

Testing Qualifications: Demonstrate to Contracting Officer's satisfaction, based on Contracting Officer's evaluation of criteria that crane system is fully operational per the design criteria and the intent of the system.

### Bridge Crane Schedule

Capacity: 2.25 metric ton (2.5 ton)

Lift: Provide maximum lift as allowed by building clearance. Low headroom hoist.

Speed: Hoist, 15 FPM; Trolley 45 FPM; Bridge, 50 FPM

CMAA Service Class: Class 'C'

Control: Hoist, trolley and bridge shall be furnished with AC adjustable control designed for variable speed control. Controls can be stationary push button style.

Motor Enclosure: Type I, motor shall be special purpose crane and hoist duty designed.

A positive stop shall be provided at bridge rail ends to prevent creep.

Crane's Manufacturer's Warranty: Submit a written warranty, without monetary limitation, signed by crane system manufacturer agreeing to promptly repair malfunctions of crane system resulting from defects in materials or workmanship for five years (minimum) from the date of Final Inspection.

## DIVISION 15 - MECHANICAL

Contractor shall design and install mechanical systems in accordance with the applicable codes and standards referenced in paragraph 2 CODES AND STANDARDS, and as specified in paragraphs 3.4 MECHANICAL REQUIREMENTS.

### 15070 Seismic Protection

All mechanical equipment and piping shall be provided with anti-sway and support devices in accordance with AFM-88-3, Chapter 13 (Seismic Design for Buildings). The requirements for seismic protection measures described in this section shall be applied to mechanical/electrical equipment and systems specified herein. Seismic protection requirements shall be in accordance with International Conference of Building Officials ICBO-01 (1994) Uniform Building Code, using an importance factor of 1.25. This facility shall be designed as being in seismic zone 2B; no other zone values shall be used to establish bracing requirements. Lateral support against earthquake induced forces shall be accomplished by positive attachments without consideration of friction resulting from gravity loads. Equipment sway bracing shall include sufficient bracing for equipment to resist a horizontal force equal to 0.94 times the weight of equipment without exceeding safe working stress of bracing components. Support shall include but not be limited to ductwork, furnaces, unit heaters, radiant heaters, and water heaters.

### 15080 Insulation

All aboveground hot and cold domestic water, evaporative cooler make-up water, condensate drain, refrigerant suction, and compressed air discharge piping shall be insulated with rigid (CG) or flexible cellular glass (FC), mineral fiber (MF), or phenolic foam (PF) insulation with factory applied vapor jacket. The vapor retarder jackets used shall be fire and water-resistant and have a white finish suitable for painting on insulation exposed in finished areas. Insulation thickness shall be as follows:

#### Piping Insulation Thickness, mm [in]

Type of Service	Material	Pipe Size, mm [in]		
		≤25[≤1]	30-50[1.52]	65-100[2.54]
Refrigerant Section	CG	40[1.5]	40[1.5]	40[1.5]
	FC, PF	25[1.0]	25[1.0]	25[1.0]
Domestic Cold Water	CG	40[1.5]	40[1.5]	40[1.5]
	FC	10[0.4]	10[0.4]	10[0.4]
	PF	25[1.0]	25[1.0]	25[1.0]
Air Conditioning	FC	10[0.4]	15[0.6]	15[0.6]
Condensate Drain	PF	25[1.0]	25[1.0]	25[1.0]

Domestic Hot Water	CG	40[1.5]	40[1.5]	40[1.5]
	FC, PF	15[0.6]	25[1.0]	25[1.0]
	MF	15[0.6]	40[1.5]	40[1.5]
Compressed Air Discharge	CG	40[1.5]	50[2.0]	50[2.0]
	PF	25[1.0]	25[1.0]	25[1.0]
	MF	40[1.5]	40[1.5]	50[2.0]

All supply, return, and outside air ducts shall be insulated with rigid (RM) or flexible mineral fiber (FM), rigid (CG) or flexible cellular glass (FC) insulation. Minimum R-value shall be 1.14 m<sup>2</sup> K/W [6.5 hr. ft<sup>2</sup>. °F/Btu]. Equipment insulation shall be rigid or flexible cellular glass for temperatures below 16 degrees C [60 degrees F], and rigid or flexible mineral fiber, or rigid cellular glass for temperatures above 16 degrees C [60 degrees F]. Insulation thickness shall be as follows:

#### Ductwork Insulation Thickness, mm [in]

<u>Type of Service</u>	<u>Material</u>	<u>≤25[≤1]</u>
Cool/Hot Air Supply Ducts, Exposed	RM, CG	50[2.0]
Cold/Hot Air Supply Ducts, Concealed	FM, FC	50[2.0]
Return Air Ducts, Exposed	RM, CG	40[1.5]
Return Ducts, Concealed	FM, FC	40[1.5]
Fresh Air Intake Ducts, Exposed	RM, CG	40[1.5]

Material such as rust, scale, dirt and moisture shall be removed from surfaces to receive insulation. Insulation shall be kept clean and dry. Corrugated aluminum jackets with factory applied moisture retarder shall be installed at all pipe penetrations requiring sealing. Where pipes and ducts pass through fire walls, fire partitions, above grade floors, and fire rated chase walls, the penetration shall be sealed with fire stopping materials.

#### 15190 Gas Piping

All liquid petroleum gas (LPG) piping above ground and below ground passing through concrete shall be threaded black carbon steel with Class 150, ASTM A197, malleable iron threaded fittings for piping 65 mm [2-1/2 in.] or less in diameter, and with flanges for above 80 mm [3 in.] or more in diameter. All threaded joints shall be installed with joint sealing compound. All underground LPG piping shall be polyethylene installed below the frost line. All gas-fired equipment shall be connected to the gas supply system with quarter-turn gas cock shut-off valve, union, corrugated brass flexible connection, and 15 cm [6 in] dirt leg. All piping and fittings shall be clean and free of cutting burrs and defects and shall be brushed and chip- and scale- blown. Buried steel piping shall be protected from corrosion with a thermoplastic resin protective coating. Gas pressure regulators sized for the connected load shall be provided with backflow and vacuum prevention. Regulator shall be vented to the exterior per the Uniform Plumbing Code. Pipes passing through concrete or masonry walls or floors shall be provided with pipe sleeves, and sealed waterproof. Penetrations through fire rated assemblies shall be sealed with firestopping material and sealant. All gas piping shall be tested with dry compressed air to hold 345 kPa [50 psig] for 2 hours minimum. All joints shall be soap tested.

**15400 Plumbing, General Purpose**

All waste and vent piping shall be cast iron with hub and spigot fittings and compression gaskets, Acrylonitrile-Butadiene-Styrene (ABS), or Polyvinyl Chloride plastic (PVC). ABS and PVC piping shall not be mixed. All horizontal waste piping shall be installed at minimum slope of 2% [1/4" per foot]. All hot and cold domestic water and compressed air piping shall be seamless type "L" hard copper above ground, and seamless type "K" tempered hard copper below ground. All copper piping joints shall be brazed.

Fixtures shall be water conservation type, in accordance with NAPHCC-01 National Standard Plumbing Code (1996). All restroom fixtures shall be standard vitreous china with chrome plated trim. Fixtures shall be installed per manufacturer's recommendation and shall include carriers, traps, faucets, stop valves, and drain fittings. Water closets shall be floor mounted, pressure-assisted tank type with 6.0 L [1.6 gallon] per flush. Urinals shall be wall hung with 3.8 L [1.0 gal] flush-valve. Lavatories shall be shall be countertop or wall mounted and provided with polished chrome faucets. Kitchen sinks shall be two-compartment stainless steel, with two-handle faucet and hand sprayer. Shower head shall be wall mounted stainless steel and shall be provided with tamperproof device to limit water flow to 0.16 L/sec [2.5 gal/min]. Floor and shower drains shall be galvanized cast iron with slotted, chromium-plated strainer. Trench drains shall be cast iron or polymer concrete with finish resistant to petroleum based chemicals. All drains shall be furnished with trap primer. Fixtures shall be equipped with appurtenances such as traps, faucets, stop valves, and drain fittings.

Water heaters shall be LPG gas-fired or electric type as indicated in statement of work. Gas fired heaters shall have a thermal efficiency of 77% or better, and electric water heaters shall have an energy factor of 0.95-0.00132V or better. A factory mounted temperature and pressure relief valve shall discharge to the nearest floor drain. All gas fired water heaters shall be provided with combustion air and type "B" flue as required by the Uniform Mechanical Code. Water pressure booster system shall be a factory pre-packaged system and shall include centrifugal pump, pressure tank, temperature/pressure relief valve, controls and pre-wired panel enclosure. System capacity shall be as indicated on architectural plan.

The compressed air system shall be a factory pre-packaged system including duplex air-cooled, reciprocating compressors mounted on vertical tanks, motor controls, wiring, pressure switches, intake air filter, cooler/dryer, receiver, and regulator, etc. The compressor shall operate automatically to regulate pressure between upper and lower limits set by the pressure switches. Compressor capacity shall be as indicated in statement of work. Ball valves shall be installed at each outlet for isolation. Electrical and mechanical requirements shall be coordinated with their respective disciplines.

**15550 FIRE SPRINKLER SYSTEM**

Drawings and General Provisions of the Contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section. Requirements of Mechanical General Provisions Sections govern the work specified in this section except the standards of NFPA #13 shall take precedence.

Furnish all materials, equipment and supplies and perform all work and operations to design, construct and make functional a fire sprinkler system to provide fire protection of all areas of the new maintenance facility and attached offices on the training range of Mountain Home Air Force Base in Idaho. The system design shall meet the

requirements of MIL-HDBK-100BC, NFPA 13, 1996 edition and be in accordance with the drawings and specifications.

Materials, devices and equipment shall be Underwriters Laboratories listed or Factory Mutual approved for use in fire protection systems. Shop drawings shall be prepared by an engineering technician or senior engineering technician (Level III or Level IV) NICET certified for fire sprinkler design. Include NICET certification number on the drawings. Drawings will be signed by the technician and submitted for approval under his name. Fire sprinkler contractor shall be licensed as a fire sprinkler contractor by any jurisdiction acceptable to the Air Force.

System Description:

Provide an automatic, wet-pipe fire sprinkler system per NFPA 13 for fire protection of all areas of the maintenance building and the attached offices. Fire sprinkler contract shall start at flange provided above the floor in the storage room. Work includes but is not limited to the following:

- a. Fire sprinkler system shall be supplied by a new riser per attached detail. Riser shall contain a butterfly pattern control valve, an alarm valve with retard chamber and water motor gong. Provide a 2" main drain with discharge to the outside. Provide a vane type water flow switch.
- b. Piping shall be concealed above ceilings in the office areas (all areas south of the occupancy separation wall). Install piping on the bottom chord of the steel trusses above the ceiling but below any insulation. Provide non-combustible sheeting above the piping to prevent insulation from settling down between the piping and the ceiling.
- c. Piping shall be installed exposed below the ceiling in the shop area. Install piping as high as possible within the space. Coordinate the elevation and location of piping and sprinkler heads with the overhead bridge crane and the ceiling mounted radiant heaters for the space.
- d. The vertical supply main to the shop area may be run exposed in the north east corner of the lookout room if conflict with the bridge crane supports prevents installation on the north side of the occupancy separation wall. Where piping passes through the wall, provide a through penetration with a fire rating equivalent to the rating of the separation wall.
- e. Provide sprinkler heads below all exposed obstructions over 48" wide (overhead doors or ducts).
- f. Provide sprinkler protection in all under-floor spaces of combustible construction or that contain combustible materials.

System Design:

Design densities and areas of application.

- a. Offices, Corridors, Rest Room, Day Room, Crew Room, ESD Room, Radio Room and Lookout: Light hazard, 4.08 lpm/sq m [0.10 gpm/sq ft] over largest area with 946 lpm [250 gpm] hose stream.
- b. Storage, Utility and Shop: Ordinary hazard group 2, 8.15 lpm/sq. m [0.20 gpm/sq. ft] over 279 sq. m [3,000 sq. ft] with 1893 lpm [500 gpm] hose stream.

Maximum coverage per sprinkler head.

- a. Ordinary Hazard: 12.08 sq. m [130 sq. ft]
- b. Light Hazard: 20.9 sq. m [225 sq. ft]

The design area shall be the hydraulically most remote rectangular area having a dimension parallel to the branch line equal to, or greater than, 1.2 times the square root of the area of sprinkler operation.

Hydraulic calculations for the fire sprinkler system shall be based on the pressures supplied by the fire pump. The calculations shall extend to the discharge flange of the fire pump to the south of the building. Obtain the churn pressure (static pressure for system) and the rating for the fire pump from the contractor responsible for the design and installation of the fire pump.

References:

- a. NFPA (National Fire Protection Association) 13, "Installation of Sprinkler Systems," 1996.
- b. MIL-HDBK-100BC, "Fire Protection for Facilities Engineering, Design and Construction", 1994 edition.
- c. Underwriters Laboratories "Fire Protection Equipment Directory," current edition.
- d. Factory Mutual Systems "Approval Guide," 1995.

Products:

All piping shall be domestic steel schedule 40 pipe and shall meet or exceed the following standards: ASTM A795, ANSI/ASTM A53, ASTM A135, ANSI B36-10M.

Interior Pipe Fittings:

- a. Cast iron threaded, ANSI B16.4.
- b. Cast iron flanged, ANSI B16.1.
- c. Malleable iron threaded, ANSI B16.3.
- d. Forged steel fittings, socket welded and threaded, ANSI B16.11.
- e. Plain end couplings and fittings, saddle couplings, and clamp type couplings are not acceptable.
- f. Other types of fittings may be used, but only those investigated and listed for this service and approved by the project engineer.

Hangers shall conform to the minimum requirements of NFPA 13. Earthquake bracing is required and shall conform to the minimum requirements of NFPA 13.

Sprinkler Heads:

- a. Shop: 1/2" orifice, small frame pendent or upright, intermediate temperature, brass, glass bulb.
- b. Areas with ceilings: Small frame, recessed, chrome plated, bulb type, ordinary temperature, chrome (2) piece adjustable canopy. Provide standard pendent sprinkler heads with deeper escutcheons where spray distribution of a recessed



sprinkler head would be obstructed by ceiling mounted fixtures such as strip lights.

- c. Sprinklers of intermediate and high temperature ratings shall be installed in specific locations as required by NFPA 13, 4-3.1.3.
- d. One spare head of each type for spare head cabinet and one head wrench for each type sprinkler.
- e. Provide quick response type sprinkler heads in accordance with NFPA 13 Section 5-2.1.3 in all light hazard areas.

#### Main Riser Valves:

- a. Provide a butterfly pattern control valve with a built-in supervisory switch.
- b. Provide an alarm valve with retard chamber, water motor gong and 2" main drain outlet. Provide pressure gauges on system and supply sides of the alarm valve clapper.

#### Fire Department Connection:

- a. Swing pattern, grooved end check valve.
- b. 1/2" automatic ball drip.

Provide a polished brass, 2-way 2-1/2" free standing fire department connection with national standard threads, breakable caps and permanent sign labeled "Auto. Spkr. Information Sciences". A single outlet FDC is acceptable if nominal diameter of riser is 3" or less.

#### Alarm Devices:

##### Sprinkler Riser:

Water flow switch: Furnish and install a water flow detector, designed for wet pipe sprinkler systems, listed by UL and approved by Factory Mutual. Detector shall be a vane-type switch installed on the system side of the alarm valve for actuation of two SPDT switches rated for 125 Vac at water flows of 10 gpm or greater.

##### Exterior:

- a. Provide and install a water motor gong connected to the alarm valve retard chamber. Locate water motor gong on the exterior of the building near the fire sprinkler riser. All piping from the alarm valve to the water motor shall be galvanized.

##### Installation:

Install system in compliance with methods detailed in NFPA 13, including seismic requirements for Area 1, maximum potential for earthquake damage. Offset as needed for other trades. Avoid conflict in areas of tight construction. Do not obstruct access to air control boxes, access doors, lights or other ceiling mounted equipment. Close pipe openings with caps or plugs during installation. Cover and protect components of the system against dirt and chemical or mechanical injury. Provide concrete splash blocks for drains and test valve discharge, etc. Concrete splash blocks shall be pre-fabricated, 2-1/2" thick, Amcor or Engineer approved equal.

Coordinate the installation of the piping with the installation of the insulation. Provide non-combustible sheeting above the piping to prevent the insulation from settling down between the piping and the ceiling. Contractor is responsible for making his own job check and any necessary adjustments in the design prior to fabrication. Make final coordination with other trades and offset piping and heads as necessary. Major conflicts shall be brought to the attention of the General Contractor for resolution by the Architect. Do not connect to underground water supply mains provided by others without receiving a copy of the "Contractor's Material and Test Certificate" covering flushing and pressure testing of the mains.

#### 15565 Heaters

Propane gas-fired heaters shall be equipped for and adjusted to burn liquefied petroleum gas at the elevation above sea level indicated. Each heater shall have a gas pressure regulator that will limit the supply pressure to the burner, and piezo spark ignition. Combustion air shall be provided per the Uniform Mechanical Code. Vent piping shall conform to NFPA 54. All heaters shall be installed with manufacturer's listed clearances, and shall be independently supported from the building structure. Electrical and plumbing requirements shall be coordinated with their respective disciplines. Wall heaters shall be propane fired natural convection type, with unit mounted controls.

Forced air furnace shall be an up-flow unit with electric heating element, direct expansion cooling coil, circuit breakers, over-temperature limit switches and side return air filter rack. Overhead shop heaters shall be infrared, electric type, complete with control panel, thermostat and over-temperature control. Thermostats shall be shielded from direct radiation.

All heaters located in site ND-4, ND-5 and ND-7 target buildings, shall be a single-burner radiant heater, equivalent to model no. MH25LP, as manufactured by Mr. Heater, (216) 881-5500.

#### 15653 Unitary Air Conditioning Systems

All refrigeration systems shall be fully charged with R-22 or R-134a refrigerant upon completion of building. Packaged terminal air conditioners (PTAC) shall be a heavy-duty, commercial grade through the wall mounted system, complete with pre-charged air-cooled refrigeration system, blower, condenser fan, freeze protection, unit mounted controls, and drain pan discharged to the outside. The unit shall also have electric heating capacity as indicated in Statement of Work. Minimum efficiency for PTAC unit shall be 10.0 SEER. Split system air conditioning units shall consist of an outdoor condensing unit, an indoor evaporator coil, and interconnecting refrigerant piping. The condensing unit shall be a commercial quality, air-cooled unit, complete with reciprocating compressor, condensing coil and fan, expansion valve, casing, coil guard, and control system panel. The indoor evaporator coil shall be matched to the furnace installed in, and shall be provided with phenolic coating. Install drain pan discharged to nearest floor drain. Minimum efficiency for condensing unit shall be 10.0 SEER. Electrical and plumbing requirements shall be coordinated with their respective disciplines.

#### 15690 Evaporative Cooling Systems

Evaporative cooling system shall be a self-contained direct, weather resistant manufactured unit, with draw-through centrifugal fan and side discharge. The outside air shall be drawn in through all sides of the unit and pass through a wetted media as

recommended by the manufacturer. The media shall be constructed of corrosion and fungus resistant material. The water delivery system shall be capable of purging the system periodically, and shall be designed to distribute water evenly to the media. Electrical and plumbing requirements shall be coordinated with their respective disciplines.

#### 15895 Air Distribution, Ventilation, and Exhaust System

All ducts shall be low pressure, galvanized sheet metal ductwork constructed per the Sheet Metal and Air Conditioning Contractors' National Association (SMACNA) HVAC duct construction standards. Fiberglass duct board may be substituted for supply and return air ductwork concealed above occupied areas only.

Supply diffusers, return grilles, and exhaust registers shall be factory constructed of steel, and shall be selected to provide an even distribution of air without causing drafts and objectionable noise. All terminals shall be provided with round duct collars and frame appropriate for ceiling or wall installation as indicated by design build plans. All supply and exhaust air terminals shall be balanced with manual, opposed blade type balancing damper installed at the connecting point of each branch duct to the main duct.

Ducts passing through walls or roofs shall be installed with sleeves or framed openings, and shall be sealed watertight. Ducts passing through fire rated walls shall be sealed with firestopping material. All elbows shall be long radius type, or provided with turning vanes. Duct transitions shall be made with maximum 15 deg. angle on each side. Flexible ducts shall be insulated non-metallic type, not exceeding 1.8 m [6 ft] in length. Flexible duct connections shall be used where connections are made to fan powered equipment, or where joining two dissimilar materials. Duct access doors shall be provided at all locations where required for access to fire and/or smoke dampers. Fire and/or smoke dampers shall conform to NFPA 90A and UL 555 requirements, and shall be rated appropriately for the location installed. Fire and/or smoke dampers shall be installed per SMACNA guidelines.

Centrifugal type power ventilators shall be roof or wall mounted as indicated per architectural plans. Fans shall be belt driven with backward inclined, non-overloading wheel, and shall be provided with manufacturer's roof curb, backdraft damper, and birdscreen. Ceiling exhaust fans shall be centrifugal type, direct driven, with acoustically lined housing and integral face grille. Electrical and plumbing requirements shall be coordinated with their respective disciplines.

#### 15940 Overhead Vehicle Tailpipe Exhaust System

Vehicle exhaust fans shall be belt driven, in-line centrifugal upblast type, with explosion proof motor enclosure and magnetic motor starters. Fan shall be specifically designed and manufactured for vehicle exhaust applications. Fan impeller shall be coated for corrosion resistance to vehicle exhaust fumes. Fan shall be provided with remote on-off switch with pilot indicating light. All ductwork shall be galvanized or stainless steel, with all accessories and fittings to furnish a complete system. Cleanouts shall be provided on the end of the main ductwork opposite the end of the fan suction connection. All exhaust terminals shall be furnished with tapered cone tailpipe adapter, wire-reinforced glass fiber and neoprene flexible tubing, tubing storage reel and overhead pipe boom. All ducts shall be sized to maintain 460 m/min [1,500 ft/min] velocity. Blast gates shall be provided to isolate each exhaust terminal. A factory representative shall be consulted for proper system design.

**15950 HVAC Control Systems**

All components shall be factory assembled products of commercial quality, with a proven record of performance in commercial or industrial use for two years or more. All equipment shall be certified Year 2000 compliant by the manufacturer. All mechanical controllers shall function stand-alone, and not require a central processor. All controllers shall be provided with all transformers, thermostats, switches, relays, contactors, power supplies, low and high voltage wiring, etc. for a fully functioning system. Where required by the UMC, duct mounted smoke detectors shall be interlocked with fans for unit shut-down upon detection of smoke. Programmable thermostats shall have digital readout, manual heat-off-cool switch, night setback, 7-day programming capability, and battery backup. Evaporative cooler shall be furnished with a line voltage thermostat having an electrical rating greater than the cooler. All wall mounted heaters shall be provided with factory installed controls mounted on front of unit. All electrical and plumbing requirements shall be coordinated with their respective disciplines.

**DIVISION 16 - ELECTRICAL**

Contractor shall design and install electrical systems in accordance with the applicable codes and standards referenced in paragraph 2 CODES AND STANDARDS, and as specified in paragraphs 3.5 ELECTRICAL REQUIREMENTS.

**16070 Seismic Protection for Electrical Equipment**

Requirements for Zone 2 seismic protection of electrical equipment, conduit and exterior utilities. Seismic restraints required on conduit 118 mm (3") and larger.

**16120 Insulated Wire and Cable**

Physical properties of conductors and insulation. Minimum wire size shall be No. 12 for power and lighting circuits; No. 14 AWG for control circuits and No. 19 for alarm circuits. Minimum wire sizes for rated circuit voltages of 2,001 volts and above shall not be less than those listed in Table 3-1 of NEMA WC 7 or part 3 of NEMA WC 8 as applicable. Color coding for cable. Minimum stranding requirements for cable. Dimensional tolerance of conductors.

**16264 Propane-Generator Set, Stationary 15-300 KW, Standby Applications**

~~Engine Propane~~ generator sets, stationary 125kW, which are suitable for serving general purpose and commercial loads. These are loads that can endure or recover quickly from transient voltage and frequency changes. (as much as 30% transient voltage drop, and plus or minus 5% frequency deviation, with a 2 second recovery time). The generator set shall be equipped with factory specified standard muffler to reduce noise.

**16375 Electrical Distribution System, Underground**

General requirements for underground electrical distribution systems.

**Manholes, Handholes and Pullboxes:** Manholes, handholes and pullboxes shall be as required. Precast concrete manholes shall have the required strength established by ASTM C 478. Frames and covers shall be made of gray cast iron and a machine-finished seat shall be provided to ensure a matching joint between frame and cover.

**Transformers:** Pad-mounted transformers shall comply with ANSI C57.12.26 and shall be of the radial type. Pad-mounted transformer stations shall be assembled and

coordinated by one manufacturer and each transformer station shall be shipped as a complete unit so that field installation requirements are limited to mounting each unit on a concrete pad and connecting it to primary and secondary lines.

**Grounding and Bonding:** Ground rods shall be copper-clad steel conforming to UL 467 not less than 19 mm in diameter by 3.1 m in length.

Finishes shall be corrosion resistant. Specifies ratings, conductor material, insulation and shielding of cables. Defines conduit types.

#### 16403 Motor Control Centers, Switchboards and Panelboards

Equipment must meet NEMA and VC construction. IEC rated equipment is not acceptable. Nameplates fastened to equipment with anodized round-head screws. Lettering shall be minimum 15 mm (1/2 inch) high. Submit certification of factory tests reports. Load terminals not rated less than 600 volts. Provide silver plated aluminum bus.

#### 16410 Automatic Transfer and By-Pass/Isolation Switches

ATS shall be electrically operated, mechanically held. Main and neutral contacts shall have silver composition (and shall be protected by approved arcing contacts). Two normally open and two normally closed auxiliary switches shall operate when transfer switch is connected to normal and emergency power respectively.

#### 16415 Electrical Work, Interior

**Cables and Wires:** Conductors No. 8 AWG and larger diameter shall be stranded. Conductors No. 10 AWG and smaller diameter shall be solid, except that conductors for remote control, alarm and signal circuits, classes 1, 2, and 3, shall be stranded unless specifically indicated otherwise. Conductor sizes and ampacities shown are based on copper, unless indicated otherwise. Conductors indicated to be No. 6 AWG or smaller diameter shall be copper. Conductors indicated to be No. 4 AWG and larger diameter shall be either copper or aluminum, unless otherwise indicated or required by manufacturer.

**Circuit Breakers:** Molded-case circuit breakers shall conform to NEMA AB 1 and UL 489 for circuit breakers and circuit breaker enclosures. Circuit breakers shall be installed in panelboards.

#### Conduit and Tubing:

- Electrical, Zinc-Coated Steel Metallic Tubing (EMT) UL 797
- Electrical Plastic Tubing and Conduit NEMA TC 2
- Flexible Conduit, Steel and Plastic General purpose type, UL 1: liquid tight, UL 360 and
- Intermediate Metal Conduit UL 1242

#### Conduit and Device Boxes and Fittings:

- Boxes, Metallic Outlet NEMA OS 1 and UL 514C
- Boxes, Nonmetallic, Outlet and Flush-Device Boxes and Covers NEMA OS 2 and UL 514C

Standard Grade: UL 298.

Ground Fault Interrupters: UL 943, Class A or B.

NEMA Standard Receptacle Configurations: NEMA WD 6. Single and Duplex, 15-Ampere and 20-Ampere, 125 Volt 15-ampere, non-locking, 20-ampere, non-locking.

#### 16475 Coordinated Power System Protection

Motors of 1/8 hp or larger shall be provided with thermal overload protection. Overload relays shall conform to NEMA ICSE and UL508. Low voltage fuses shall conform to NEMA FU 1. Voltage ratings shall not be less than the applicable circuit voltage. Circuit breakers used in a series combinations shall be in accordance with UL 489.

#### 16601 Lightning Protection System

Conductors shall be of the uninsulated type. Conductor size shall be No. 6 AWG copper. Flexible or strap type copper conductors, with a thickness not less than No. 12 AWG and an electrical and mechanical equivalence of not less than No. 6 AWG, shall be used for bonding between moveable objects and connections which disconnected frequently.

Ground rods shall be copper-clad steel, minimum 16 mm (5/8 inch) in diameter and 2.4 mm (8 feet) in length. Use larger rods where necessary to obtain the specified resistivity to ground.

END OF SECTION

### **DAVIS-BACON GENERAL WAGE DECISIONS:**

- a) **ID990004 (Building)** - All work inside and within 5 feet (1.5 meters) of the building(s) is to be performed under this wage decision)
- b) **ID990001 (Heavy and Highway)** - All work more than 5 feet (1.5 meters) from the perimeter of a building be performed under this wage decision)

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## General Decision Number ID000001

General Decision Number ID000001  
Superseded General Decision No. ID990001  
State: Idaho  
Construction Type:  
HEAVY  
HIGHWAY  
County(ies):  
STATEWIDE  
HEAVY AND HIGHWAY CONSTRUCTION PROJECTS  
Modification Number      Publication Date  
                                 0                      02/11/2000  
                                 1                      02/25/2000

COUNTY(ies):  
STATEWIDE

CARP0001D 06/01/1999

	Rates	Fringes
AREA 1:		
CARPENTERS	21.56	5.60
PILEDRIVERS	21.82	5.60
MILLWRIGHTS	22.66	5.60
DIVERS	53.46	5.60
DIVERS TENDERS	25.65	5.60

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CARP0808A 01/01/2000

	Rates	Fringes
AREA 2:		
ZONE 1:		
CARPENTERS	19.74	6.43
PILEDRIVERS	19.91	6.43
MILLWRIGHTS AND MACHINE ERECTORS	20.03	6.43
DIVERS	48.88	6.43
DIVERS TENDERS	19.91	6.43
Zone Differential (Add to Zone 1 rates):		
Zone 2 - \$1.00		

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ELEC0073D 01/01/2000

	Rates	Fringes
KOOTENAI COUNTY		
ELECTRICIANS	22.72	3%+8.13
CABLE SPLICERS	23.12	3%+8.13

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ELEC0077A 02/01/2000

	Rates	Fringes
AREA 1:		
LINE CONSTRUCTION:		
CABLE SPLICERS	29.41	6.75+3.875%
LINEMEN, POLE SPRAYERS,		
HEAVY LINE EQUIPMENT MAN	26.52	6.75+3.875%
LINE EQUIPMENT MEN	22.86	5.00+3.875%
POWDERMEN, JACKHAMMERMEN	19.95	5.00+3.875%
GROUNDMEN	18.74	5.00+3.875%
TREE TRIMMER	20.57	5.00+3.875%

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ELEC0291B 06/01/1999

	Rates	Fringes
ADAMS, ADA, BOISE, CANYON, ELMORE, GEM, OWYHEE, PAYETTE, VALLEY		

AND WASHINGTON COUNTIES

ELECTRICIANS (including traffic  
signalization)

21.63

5.67+4.4%

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ELEC0291C 03/01/1999

	Rates	Fringes
AREA 2:		
CABLE SPLICER	27.59	5.20+4.25%
LINEMAN	25.00	5.20+4.25%
LINE EQUIPMENT MECHANIC (RIGHT-OF-WAY)	21.17	5.20+4.25%
LINE EQUIPMENT OPERATOR	21.17	5.20+4.25%
GROUNDMAN	15.45	4.87+4.25%

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ENGI0370B 01/01/2000

	Rates	Fringes
AREA 2: (Anyone working on HAZMAT jobs working with supplied air shall receive \$1.00 per hour above classification)		
THERE IS A HAZMAT CLASSIFICATION INCLUDED IN EACH GROUP		
POWER EQUIPMENT OPERATORS:		

ZONE 1:

GROUP 1	20.39	5.12
GROUP 2	20.55	5.12
GROUP 3	20.92	5.12
GROUP 4	21.23	5.12
GROUP 5	21.40	5.12
GROUP 6	21.58	5.12
GROUP 7	21.94	5.12
GROUP 8	22.17	5.12
GROUP 9	22.40	5.12
GROUP 10	22.65	5.12

Zone Differential (Add to Zone 1  
rate): Zone 2 - \$1.00

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Brakeman; Crusher Plant Feeder (Mechanical); Deckhand;  
Grade Checker; Heater Tender; Land Plane; Pumpman

GROUP 2: Air Compressor; Assistant Refrigeration Plant  
Operator; Bell Boy; Bit Grinder Operator; Blower Operator  
(cement); Bolt Threader Machine Operator; Broom; Cement Hog;  
Concrete Mixer; Concrete Saw multiple cut; Discing - Harrowing or  
Mulching (regardless of motive power); Distributor Leverman;  
Drill Steel Threader Machine Operator; Fireman-all; Hoist-single  
drum; Hydraulic Monitor Operator-skid mounted; Oiler (single  
piece of equipment); Crusher Oiler; Pugmixer-Box Operator; Spray  
Curing Machine; Tractor-rubber tired farm type using attachments

GROUP 3: A-Frame Truck (hydra lift, Swedish Cranes, Ross  
Carrier, Hyster on construction jobs); Battery Tunnel Locomotive;  
Belt Finishing Machine; Cable Tenders (underground); Chip  
Spreader Machine (self-propelled); Hoist-2 or more drums or  
Tower Hoist; Hydralift-Fork lift & similar (when hoisting);  
Oilers (underground); Power Loader (bucket elevator conveyors);  
Rodman; Road Roller (regardless of motive power)

GROUP 4: Boring Machines (earth or rock); Quarrymaster-Joy-  
tractor mounted, Drills: Churn-Core-Calyx or Diamond; Front  
End & Overhead Loaders and similar machines-(up to and  
including 4 yds) (rubber-tired); Grout Pump; Hydra-Hammer;  
Locomotive Engineer; Longitudinal Float Machine; Mobilemixer;  
Spreader Machine; Tractor-rubber tired-using Backhoe,  
Transverse Finishing Machine; Trenching Machines; Waggoner  
Compactor and similar; Asphalt Spreaders

GROUP 5: Concrete Plant Operator; Concrete Road Paver (dual);  
Elevating Grader Operator; Euclid Elevating Loader; Generator  
Plant Operator-Mechanic (diesel electric); Post Hole Auger or  
Punch Operator; Power Shovels, Backhoes and Draglines (under 3/4

yd); Pumpcrete; Refrigeration Plant Operator(1000 tons and under;  
Road Roller(finishing high type pavement); Service Equipment  
Oiler; Skidder-rubber tired; Sub Grader; Multiple Station  
Beltline Operator; Screed Operator

GROUP 6: Asphalt Pavers-self propelled; Asphalt Plant  
Operator; Blade Operator (motor patrol); Concrete Slip Form  
Paver; Cranes - up to and including 50 ton; Crusher Plant  
Operator; Derrick Operator; Drilling Equipment (bit under 8  
inches) - Robbins Reverse Circulation and similar; Front End and  
Overhead Loaders and similar machines-over 4 yds to and  
including 7 yds; Koehring Scooper; Heavy Duty Mechanic or  
Welder; Mucking Machine (underground); Multi-batch Concrete Plant  
Operator; Piledriver Engineer; Power Shovels, Backhoes and  
Draglines (3/4 yd to and including 3 1/2 yds), Tractor-crawler  
type-including all attachments; Refrigeration Plant Operator  
(over 1,000 tons); Trimmer Machine Operator; Concrete Pump Boom  
Truck; All Scrapers up to and including 40 yards

GROUP 7: Cableway Operator; Continuous Excavator (Barber Greene  
WL-50); Cranes-over 50 tons; Dredges; Drilling Equipment (bit 8  
inches and over)-Robbins Reverse Circulation & similar; Fine  
Grader-CMI or equivalent; Front End & Overhead Loaders &  
similar machines-(over 7 yards); Power Shovels & Draglines over  
3 1/2 yards; Quad type Tractors with all attachments; all  
Scrapers, pulling wagons, belly dumps and attachments (over 40  
yards to and including 60 yards); Multiple Scraper Units; Tower  
Crane Operator

GROUP 8: Scrapers - Euclid & similar, pulling wagons, belly  
dumps and attachments, over 60 yards to and including 80 yards

GROUP 9: Scrapers - Euclid and similar, pulling wagons, belly  
dumps and attachments, over 80 yards to and including 100  
yards

GROUP 10: Scrapers - Euclids and similar, pulling wagons, belly  
dumps and attachments, over 100 yards

BOOM PAY: All Cranes and Concrete Pump Boom Trucks

100 ft to 150 ft \$.15 over scale

150 ft to 200 ft \$.30 over scale

Over 200 ft \$.45 over scale

NOTE: In computing the length of the boom on Tower Cranes, they  
shall be measured from the base of the tower to the point  
of the boom.

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ENGI0370D 06/01/1999

AREA 1: (Anyone working on HAZMAT jobs working with supplied air  
shall receive \$1.00 per hour above classification)

POWER EQUIPMENT OPERATORS:

ZONE 1:

	Rates	Fringes
GROUP 1A	20.51	5.45
GROUP 1	21.06	5.45
GROUP 2	21.38	5.45
GROUP 3	21.99	5.45
GROUP 4	22.15	5.45
GROUP 5	22.31	5.45
GROUP 6	22.59	5.45
GROUP 7	22.86	5.45
GROUP 8	23.96	5.45

Zone Differential (Add to Zone 1  
rate): Zone 2- \$2.00

BASE POINTS: Spokane, Moses Lake, Pasco, Washington; Lewiston,  
Idaho

Zone 1: Within 45 radius miles from the main post office

Zone 2: Outside 45 radius miles from the main post office

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1A: Boat Operator; Crush Feeder; Oiler; Steam Cleaner

GROUP 1: Bit Grinders; Bolt Threading Machine; Compressors (under 2000 CFM, gas, diesel, or electric power); Deck Hand; Drillers Helper (assist driller in making drill rod connections, service drill engine and air compressor, repair drill rig and drill tools, drive drill support truck to and on the job site, remove drill cuttings from around bore hole and inspect drill rig while in operation); Fireman & Heat Tender; Grade Checker; Hydro-seeder, Mulcher, Nozzleman; Oiler Driver, & Cable Tender, Mucking Machine; Pumpman; Rollers, all types on subgrade, including seal and chip coatings (farm type, Case, John Deere & similar, or Compacting Vibrator), except when pulled by Dozer with operable blade; Welding Machine

GROUP 2: A-frame Truck (single drum); Assistant Refrigeration Plant (under 1000 ton); Assistant Plant Operator, Fireman or Pugmixer (asphalt); Bagley or Stationary Scraper; Belt Finishing Machine; Blower Operator (cement); Cement Hog; Compressor (2000 CFM or over, 2 or more, gas, diesel or electric power); Concrete Saw (multiple cut); Distributor Leverman; Ditch Witch or similar; Elevator Hoisting Materials; Dope Pots (power agitated); Fork Lift or Lumber Stacker, hydra-lift & similar; Gin Trucks (pipeline); Hoist, single drum; Loaders (bucket elevators and conveyors); Longitudinal Float; Mixer (portable-concrete); Pavement Breaker, Hydra-Hammer & similar; Power Broom; Railroad Ballast Regulation Operator (self-propelled); Railroad Power Tamper Operator (self-propelled); Railroad Tamper Jack Operator (self-propelled); Spray Curing Machine (concrete); Spreader Box (self-propelled); Straddle Buggy (Ross & similar on construction job only); Tractor (Farm type R/T with attachment, except Backhoe); Tugger Operator

GROUP 3: A-frame Truck (2 or more drums), Assistant Refrigeration Plant & Chiller Operator (over 1000 ton); Backfillers (Cleveland & similar); Batch Plant & Wet Mix Operator, single unit (concrete); Belt-Concrete Conveyors with power pack or similar; Belt Loader (Kocal or similar); Bending Machine; Bob Cat; Boring Machine (earth); Boring Machine (rock under 8" bit) (Quarry Master, Joy or similar); Bump Cutter (Wayne, Saginaw or similar); Canal Lining Machine (concrete); Chipper (without crane); Cleaning & Doping Machine (pipeline); Deck Engineer; Elevating Belt-type Loader (Euclid, Barber Green & similar); Elevating Grader-type Loader (Dumora, Adams or similar); Generator Plant Engineers (diesel or electric); Gunnite Combination Mixer & Compressor; Locomotive Engineer; Mixermobile; Mucking Machine; Posthole Auger or Punch; Pump (grout or jet); Soil Stabilizer (P & H or similar); Spreader Machine; Tractor (to D-6 or equivalent) and Traxcavator; Traverse Finish Machine; Turnhead Operator

GROUP 4: Concrete Pumps (squeeze-crete, flow-crete, pump-crete, Whitman & similar); Curb Extruder (asphalt or concrete); Drills (churn, core, calyx or diamond) (operates drilling machine, drive or transport drill rig to and on job site and weld well casing); Equipment Serviceman, Greaser & Oiler; Hoist (2 or more drums or Tower Hoist); Loaders (overhead & front-end, under 4 yds. R/T); Refrigeration Plant Engineer (under 1000 ton); Rubber-tired Skidders (R/T with or without attachments); Surface Heater & Planer Machine; Trenching Machines (under 7 ft. depth capacity); Turnhead (with re-screening); Vacuum Drill (reverse circulation drill under 8" bit)

GROUP 5: Backhoe (under 45,000 gw); Backhoe & Hoe Ram (under 3/4 yd.); Carrydeck & Boom Truck (under 25 tons); Cranes (25 tons & under), all attachments including clamshell, dragline; Derricks & Stifflegs (under 65 tons); Drilling Equipment (8" bit & over) (Robbins, reverse circulation & similar) (operates drilling machine, drive or transport drill rig to and on job site and weld well casing); Hoe Ram; Piledriving Engineers; Paving (dual drum);

Railroad Track Liner Operator (self-propelled); Refrigeration Plant Engineer (1000 tons & over); Signalman (Whirleys, Highline Hammerheads or similar)

GROUP 6: Asphalt Plant Operator; Automatic Subgrader (Ditches & Trimmers) (Autograde, ABC, R.A. Hansen & similar on grade wire); Backhoes (45,000 gw and over to 110,000 gw); Backhoes & Hoe Ram (3/4 yd. to 3 yd.); Batch Plant (over 4 units); Batch & Wet Mix Operator (multiple units, 2 & incl. 4); Blade Operator (motor Patrol & Attachments, Athey & Huber); Boom Cats (side); Cableway Controller (dispatcher); Clamshell Operator (under 3 yds.); Compactor (self-propelled with blade); Concrete Pump Boom Truck; Concrete Slip Form Paver; Cranes (over 25 tons, including 45 tons), all attachments including clamshell, dragline; Crusher, Grizzle and Screening Plant Operator; Dozer, 834 R/T & similar; Draglines (under 3 yds.); Drill Doctor; H.D. Mechanic; H.D. Welder; Loader Operator (front-end & overhead, 4 yds. incl. 8 yds.); Multiple Dozer Units with single blade; Paving Machine (asphalt and concrete); Quad-Track or similar equipment; Roller (finishing asphalt pavement); Roto Mill (pavement grinder); Scrapers, all, Rubber-tired; Screed Operator; Shovel (under 3 yds.); Tractors (D-6 & equivalent & over); Trenching Machines (7 ft. depth & over); Tug Boat Operator; Vactor Guzzler, Super Sucker

GROUP 7: Backhoe (over 110,000 gw); Backhoes & Hoe Ram (3 yds. & over); Blade (finish & bluetop) Automatic, CMI, ABC, Finish Athey & Huber & similar when used as automatic; Cableway Operators; Concrete Cleaning/Decontamination Machine Operator; Cranes (over 45 tons to but not including 85 tons), all attachments including clamshell, dragline; Derricks & Stifflegs (65 tons & over); Elevating Belt (Holland type); Heavy Equipment Robotics Operator; Loader (360 degrees revolving Koehring Scooper or similar); Loaders (overhead & front-end, over 8 yds. to 10 yds.); Rubber-tired Scrapers (multiple engine with three or more scrapers); Shovels (3 yds. & over); Ultra High Pressure Waterjet Cutting Tool System Operator (30,000 psi); Vacuum Blasting Machine Operator; Whirleys & Hammerheads, ALL

GROUP 8: Cranes (85 tons and over, and all climbing, overhead, rail and tower); Loaders (overhead and front-end, 10 yards and over); Helicopter Pilot

BOOM PAY: (All Cranes, including Tower)

180' to 250'                    \$.30 over scale

Over 250'                    \$.60 over scale

NOTE: In computing the length of the boom on Tower Cranes, they shall be measured from the base of the Tower to the point of the boom.

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IRON0014A 07/01/1999

	Rates	Fringes
ADAMS (REMAINDER), BENEWAH, BONNER, CLEARWATER, IDAHO, KOOTENAI, LATAH, LEMHI (NW CORNER), NEZ PERCE, SHOSHONE, VALLEY (NW 1/3) AND WASHINGTON (NW 1/2) COUNTIES		
IRONWORKERS	23.47	10.35

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IRON0732A 06/01/1999

	Rates	Fringes
ADA, ADAMS (E. CORNER), BANNOCK, BEAR LAKE, BINGHAM, BLAINE, BOISE, BUTTE, BONNEVILLE, CAMAS, CANYON, CARIBOU, CASSIA, CLARK, CUSTER, ELMORE, FRANKLIN, FREMONT, GEM GOODING, JEFFERSON, JEROME, LEMHI (REMAINDER), LINCOLN, MADISON, MINIDOKA, ONEIDA, OWYHEE, PAYETTE, POWER, TETON, TWIN FALLS, VALLEY (SE 2/3) AND WASHINGTON (SE 1/2) COUNTIES		
IRONWORKERS	19.31	8.51

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LABO0155A 01/01/2000

AREA 2: (Anyone working on HAZMAT jobs working with supplied air shall receive \$1.00 per hour above classification)

THERE IS A HAZMAT CLASSIFICATION IN EACH GROUP

LABORERS:

ZONE 1:

	Rates	Fringes
GROUP 1	17.78	6.05
GROUP 2	17.88	6.05
GROUP 3	17.98	6.05
GROUP 4	18.08	6.05
GROUP 5	18.13	6.05
GROUP 6	18.38	6.05
GROUP 7	18.63	6.05
GROUP 8	18.03	6.05
GROUP 9	18.18	6.05
GROUP 10	18.28	6.05

Zone Differential (Add to Zone 1 rate): Zone 2 - \$1.00

LABORERS CLASSIFICATIONS

GROUP 1: General laborers; Sloper, cleaning and grading; Form stripper; Concrete crew; Concrete curing crew; Carpenter tender; Asphalt laborer; Hopper tender; Flagman (including Pilot car); Watchman; Heater Tender; Stake jumper; Choker setters; Spreader and weighman; Scouring concrete; Rip Rap Man (hand placed); Crusher tender; Cribbing and shoring (in open ditches); Machinery and parts cleaner; Leverman, manual or mechanical; Demolition, salvage; Landscaper; Tool roomman; Traffic Stripping Crew; Asbestos Abatement Laborers; Janitor (detail clean-up, such as but not limited to cleaning floors, ceilings, walls, windows, etc., prior to final acceptance by the owner)

GROUP 2: Chuck tender; Driller tender; Air tampers; Gunnite nozzleman tender; Pipewrapper; Tar pot tender; Concrete sawyer; Concrete Grinder; Signalman, handling cement; Dumpman; Steam nozzleman; Air and water nozzleman (Green Cutter, Concrete); Vibrator (less than 4"); Pumpcrete and grout pump crew; hydraulic Monitor; Hydro Blaster

GROUP 3: Pipelayer, including sewer, drainage, sprinkler systems and water lines; Free Air Caisson; Jackhammer; Paving Breaker; Chipping Gun Concrete; Powderman Tender; Asphalt Raker; Gasoline powered Tamper; Electric Ballast Tamper; Sand Blasting; Form Setter, airport paving; Gunman (Gunitite); Manhole Setter; Hand guided machines, such as Roto Tillers, Trenchers, Post-Hole Diggers, Walking Garden Tractors, etc.; Cutting Torch

GROUP 4: Hod Carrier; Mason Tender; Plaster Tender; Mason Tender (concrete); Terrazzo-Tile Tender

GROUP 5: Highscaler; Wagon Drill; Grade Checker; Gunnite Nozzleman; Timber faller and buckler

GROUP 6: Diamond Drills; Drillers on Drills with Manufacturers rating 3" or over

GROUP 7: Powderman

UNDERGROUND WORK

GROUP 8: Reboundman; Chucktender; Nipper; Dumpman; Vibrator (less than 4"); Brakeman; Mucker; Bullgang

GROUP 9: Form Setter and Mover

GROUP 10: Miners; Machineman; Timbermen; Steelmen; Drill Doctors; Spaders and Tuggers; Spilling and/or Caisson Workers; Vibrator (over 4")

-----  
LABO0238B 06/01/1999

	Rates	Fringes
AREA 1:		
LABORERS:		

ZONE 1:

GROUP 1	17.40	4.51
GROUP 2	19.50	4.51
GROUP 3	19.77	4.51
GROUP 4	20.04	4.51
GROUP 5	20.32	4.51
GROUP 6	21.69	4.51

Zone Differential (Add to Zone 1 rates): Zone 2 - \$2.00

BASE POINTS: Spokane, Moses Lake, Pasco, Lewiston

Zone 1: 0-45 radius miles from the main post office.

Zone 2: 45 radius miles and over from the main post office

LABORERS CLASSIFICATIONS

GROUP 1: Flagman; Scaleman; Traffic Control Maintenance Laborer (to include erection and maintenance of barricades, signs, and relief of flagperson); Window Washer; Washer/Cleaner (Detail cleanup, such as but not limited to cleaning floors, ceilings, walls, windows, etc. prior to final acceptance by the owner)

GROUP 2: Asbestos Abatement Worker; Brush Hog Feeder; Carpenter Tender; Cement Handler; Cleanup laborer; Concrete Crewman (to include stripping of forms, hand operating jacks on slip form construction, application of concrete curing compounds, pumpcrete machine, signaling, handling the nozzle of squeezecrete or similar machine, 6 inches and smaller); Concrete Signalman; Crusher Feeder; Demolition (to include clean-up, burning, loading, wrecking and salvage of all material); Dumpman; Fence Erector; Form Cleaning Machine Feeder, Stacker; General Laborer; Grout Machine Header Tender; Guard Rail (to include guard rails, guide and reference posts, sign posts, and right-of-way markers); Hazardous Waste Worker; Miner, Class "A" (to include bull gang, concrete crewman, dumpman and pumpcrete crewman, including distributing pipe, assembly and dismantle, and nipper); Nipper; Riprap Man; Sandblast Tailhoseman; Scaffold Erector (wood or steel); Stake Jumper; Structural Mover (to include separating foundation, preparation, cribbing, shoring, jacking and unloading of structures); Tailhoseman (water nozzle); Timber Bucker and Faller (by hand); Track Laborer (RR); Truck Loader; Well-Point Man

GROUP 3: Asphalt Roller, walking; Cement Finisher Tender; Concrete Saw, walking; Demolition Torch; Dope Pot Firemen, non-mechanical; Form Setter, paving; Grader Checker Using Level; Jackhammer Operator Miner, Class B (to include brakeman, finisher, vibrator, form setter); Nozzleman (to include squeeze and flo-crete nozzle); Nozzleman, water, air or steam; Pavement Breaker (under 90 lbs.); Pipelayer, corrugated metal culvert; Pipelayer, multi-plate; Pot Tender; Power Buggy Operator; Power Tool Operator, gas, electric, pneumatic; Railroad Equipment, power driven, except dual mobile power spiker or puller; Railroad Power Spiker or Puller, dual mobile; Rodder and Spreader; Tamper (to include operation of Barco, Essex and similar tampers); Trencher, Shawnee; Tugger Operator; Wagon Drills; Water Pipe Liner; Wheelbarrow, power driven

GROUP 4: Air and Hydraulic Track Drill; Asphalt Raker; Brush Machine (to include, horizontal construction joint clean-up brush machine, power propelled); Caisson Worker, free air; Chain Saw Operator and Faller; Concrete Stack (to include laborers when working on free standing concrete stacks for smoke or fume control above 40 feet high); Gunnite (to include operation of machine and nozzle); High Scaler; Miner, Class C (to include miner, nozzleman for concrete, laser beam operator and operator and rigger on tunnels); Monitor Operator, air track or similar mounting; Mortar Mixer; Nozzleman (to include jet blasting nozzleman, over 1,200 lbs., jet blast machine power-propelled, sandblast nozzle); Pavement Breaker, 90 lbs. and over Pipelayer

(to include working topman, caulker, collerman, jointer, mortarman, rigger, jacker, shorer, valve or meter installer, tamper); Pipewrapper; Plasterer Tenders; Vibrators, all  
 GROUP 5 - Drills with dual masts; Hazardous Waste Worker, Level A; Miner Class "D" (to include raise and shaft miner, laser beam operator on raises and shafts)

GROUP 6 - Powderman

LABO0238F 06/01/1999

	Rates	Fringes
AREA 1		
HOD CARRIERS	20.19	4.51

LABO0257A 06/01/1992

	Rates	Fringes
AREA 1:		
LABORERS		
LANDSCAPERS	10.69	3.37

PAIN0054F 07/01/1998

	Rates	Fringes
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KOOTEANI COUNTY

PAINTERS\*:

Brush, Roller, Paperhanger,  
 Striping, Steam-Cleaning and  
 Spray

11.80	2.68
-------	------

\*\$.70 shall be paid over and above the basic wage rates listed for work on swing stages and high work over 30 feet.

PLAS0072A 06/01/1999

	Rates	Fringes
AREA 1:		
ZONE 1:		
CEMENT MASONS	21.57	5.24

Zone Differential (Add to Zone 1 rate): Zone 2 - \$2.00

BASE POINTS: Spokane, Moses Lake, Pasco, and Lewiston

Zone 1: 0-45 radius miles from the main post office

Zone 2: Over 45 radius miles from the main post office

PLAS0219B 01/01/2000

	Rates	Fringes
AREA 2:		
CEMENT MASONS:		
ZONE 1		
GROUP 1	15.56	10.05
GROUP 2	15.76	10.05

CEMENT MASONS CLASSIFICATIONS

GROUP 1: - JOURNEYMAN CEMENT MASON (including but not limited to hand chipping and patching, all types grouting and pointing of all concrete constructions, screed setting including screed pins, dry packing of all concrete including Embeco, plugging and filling all voids, etc., concrete construction, waterproofing of concrete with Thoroseal or similar materials.

GROUP 2: - CEMENT MASON (magnesite terazzo and mastic composition, two component epoxies, Clary and similar type screed operator, sandblasting of concrete for architectural finished only, Power chipping and bushhammer, all color concrete work, Power Trowel Operator, Power Grinder Operator, Gunnite and Composition Floor Layer).

Zone Differential (Add to Zone 1 rates): - \$1.00

PLUM0044D 06/01/1998

	Rates	Fringes
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AREA 1:		
PLUMBERS AND PIPEFITTERS	26.81	8.29
-----		
PLUM0296A 06/01/1999		
	Rates	Fringes
AREA 2:		
PLUMBERS AND PIPEFITTERS	22.54	7.02
-----		
* TEAM0483A 01/01/2000		
	Rates	Fringes
AREA 2: (Anyone working on HAZMAT jobs working with supplied air shall receive \$1.00 per hour above classification)		
THERE IS A HAZMAT CLASSIFICATION INCLUDED IN EACH GROUP		
TRUCK DRIVERS:		
ZONE 1		
GROUP 1	17.87	7.43
GROUP 2	18.24	7.43
GROUP 3	18.47	7.43
GROUP 4	18.65	7.43
GROUP 5		
CLASS A	18.47	7.43
B	18.65	7.43
C	18.88	7.43
D	19.39	7.43
E	19.62	7.43
F	20.06	7.38
Zone Differential (Add to Zone 1 Rate):		
Zone 2 - \$1.00		
TRUCK DRIVERS CLASSIFICATIONS		
GROUP 1: Leverman Loading at Bunkers; Pilot Car or Escort Driver Flat Bed-2 Axle and Pickup Hauling material; Water Truck (1,000 gallons and under); Ambulance Driver; Flat Bed-3 Axle; Fuel Truck (1,000 gallons and under); Greaser; Tireman; Serviceman; Buggymobile; Manhaul (Shuttle Truck or Bus)		
GROUP 2: Slurry or Concrete Pumping Truck; Flat Bed using Power Takeoff; Semi Trailer-Low Boy (up to 96,000 lbs. GVW); Bulk Cement Tanker (up to 96,000 lbs. GVW); Fork Lift (Bull Lift, Hydro Lift), Ross Hyster and similar Straddle equipment; "A" Frame Truck (Swedish Crane, Iowa 3,000 Hydro Lift); Transit Mix Truck (0-10 yds); Warehouseman Loading and Unloading		
GROUP 3: Water Tank Truck; Fuel Truck (over 1,000 gallons); Transit Mix Trucks (10 yards & over), Dumpsters; Distributor or Spreader Truck; Field Tireman-Serviceman; Snow Plow (Truck Mounted); Warehouseman; Counterman, Shipping Receiving, Cardex.		
GROUP 4: Low Boy (96,000 lbs. GVW & over); Bulk Cement Tanker (96,000 lbs. GVW & over); Transit Mix Trucks (over 10 yards); Turnarocker & similar equipment; Warehouseman General		
GROUP 5:		
CLASS: A - Truck - Side, end and bottom dump, 0-16 yards, inclusive.		
B - Truck - Side, end and bottom dump, 16-30 yards, inclusive.		
C - Truck - Side, end and bottom dump, 30-50 yards, inclusive, and Truck Mechanic.		
D - Truck - Side, end and bottom dump, 50-75 yards, inclusive.		
E - Truck - Side, end and bottom dump, 75-100 yards inclusive.		
F - Truck - Side, end and bottom dump, over 100 yards.		
-----		

Rates                      Fringes

AREA 1: (ANYONE WORKING ON HAZMAT JOBS SEE FOOTNOTE A BELOW)

TRUCK DRIVERS:

ZONE 1:		
GROUP 1	17.42	7.31
GROUP 2	19.69	7.31
GROUP 3	20.19	7.31
GROUP 4	20.52	7.31
GROUP 5	20.63	7.31
GROUP 6	20.80	7.31
GROUP 7	21.33	7.31
GROUP 8	21.66	7.31

Zone Differential (Add to Zone 1  
rate): Zone 2 - \$2.00)

BASE POINTS: Spokane, Moses Lake, Pasco, Lewiston

Zone 1: 0-45 radius miles from the main post office

Zone 2: 45 radius miles and over from the main post office

#### TRUCK DRIVERS CLASSIFICATIONS

GROUP 1: Escort Driver or Pilot Car; Employee Haul; Power Boat  
Hauling Employees or Material

GROUP 2: Fish Truck; Flat Bed Truck; Fork Lift (3000 lbs. and  
under); Leverperson (loading trucks at bunkers); Trailer Mounted  
Hydro Seeder and Mulcher; Seeder & Mulcher; Stationary Fuel  
Operator; Tractor (small, rubber-tired, pulling trailer or  
similar equipment)

GROUP 3: Auto Crane (2000 lbs. capacity); Buggy Mobile &  
Similar; Bulk Cement Tanks & Spreader; Dumptor (6 yds. & under);  
Flat Bed Truck with Hydraulic System; Fork Lift (3001-16,000  
lbs.); Fuel Truck Driver; Steamcleaner & Washer; Power Operated  
Sweeper; Rubber-tired Tunnel Jumbo; Scissors Truck; Slurry Truck  
Driver; Straddle Carrier (Ross, Hyster, & similar); Tireperson;  
Transit Mixers & Truck Hauling Concrete (3 yd. to & including 6  
yds.); Trucks, side, end, bottom & articulated end dump (3 yards  
to and including 6 yards); Warehouseperson (to include shipping &  
receiving); Wrecker & Tow Truck

GROUP 4: A-Frame; Burner, Cutter, & Welder; Service Greaser;  
Trucks, side, end, bottom & articulated end dump (over 6 yds. to  
& including 12 yds.); Truck Mounted Hydro Seeder;  
Warehouseperson; Water Tank Truck (0-8000 gallons)

GROUP 5: Dumptor (over 6 yds.); Lowboy (50 tons & under);  
Self-loading Roll Off; Semi-Truck & Trailer; Tractor with Steer  
Trailer; Transit Mixers and Trucks Hauling Concrete (over 6 yds.  
to and including 10 yds.); Trucks, side, end, bottom &  
articulated end dump (over 12 yds. to & including 20 yds.);  
Truck-Mounted Crane (with load bearing surface either mounted or  
pulled), up to 14 ton; Vacuum truck (super sucker, guzzler,  
etc.); Water Tank Truck (8,001-14,000 gallons)

GROUP 6: Flaherty Spreader Box Driver; Flowboys; Fork Lift  
(over 16,000 lbs.); Dumps (Semi-end); Lowboy (over 50 tons);  
Mechanic (Field); Transfer Truck & Trailer; Transit Mixers &  
Trucks Hauling Concrete (over 10 yds. to & including 20 yds.);  
Trucks, side, end, bottom & articulated end dump (over 20 yds. to  
& including 40 yds.); Truck and Pup; Tournarocker, DW's &  
similar, with 2 or more 4 wheel-power tractor with trailer,  
gallonage or yardage scale, whichever is greater; Water Tank  
Truck (8001-14,000 gallons)

GROUP 7: Oil Distributor Driver; Stringer Truck (cable operated  
trailer); Transit Mixers & Trucks Hauling Concrete (over 20  
yds.); Truck, side, end, bottom & articulated end dump (over 40  
yds. to & including 100 yds.); Truck mounted Crane (with load  
bearing surface either mounted or pulled (16 through 25 tons)

GROUP 8: Prime Movers & Stinger Truck; Trucks, side, end,  
bottom and articulated end dump (over 100 yds.);

Helicopter Pilot Hauling Employees or Materials

FOOTNOTE A - Anyone working on a HAZMAT job, where HAZMAT certification is required, shall be compensated as a premium, in addition to the classification working in as follows:

LEVEL C-D: - \$.50 PER HOUR - This is the lowest level of protection. This level may use an air purifying respirator or additional protective clothing.

LEVEL A-B: - \$1.00 PER HOUR - Uses supplied air in conjunction with a chemical splash suit or fully encapsulated suit with self-contained breathing apparatus.

NOTE: Trucks Pulling Equipment Trailers: shall receive \$.15/hour over applicable truck rate

-----  
ZONE DEFINITIONS

AREA 2

(If a project is located in more than one zone the lower zone rate shall apply)

Zone 1: That area within the State of Idaho located within 30 miles on either side of I-84 from the Oregon-Idaho State Line on the West to the Intersection of I-84 and I-86 in Cassia County, then following I-86 to Pocatello, then following I-15 to Idaho Falls, then following State Highway #20 - 10 miles north to the intersection with Moody Road then following I-15 south from the city of Pocatello to a point 10 miles South of the Southern Boundary of Bannock County extended to the West.

Zone 2: The remaining area of that portion of the State of Idaho south of Parallel 46 (the Washington-Oregon State Line extended eastward to Montana) that is not included in Zone 1 as described above.

AREA DEFINITIONS

(APPLIES TO ALL CRAFTS)

AREA 1:

Benewah, Bonner, Boundary, Clearwater, Idaho (North of the 46th Parallel), Kootenai, Latah, Lewis, Nez Perce, and Shoshone Counties.

AREA 2:

Ada, Adams, Bannock, Bear Lake, Bingham, Blaine, Boise, Butte, Bonneville, Camas, Canyon, Caribou, Cassia, Clark, Custer, Elmore, Franklin, Fremont, Gem, Gooding, Idaho (South of the 46th Parallel), Jefferson, Jerome, Lemhi, Lincoln, Madison, Minidoka, Oneida, Owyhee, Payette, Power, Teton, Twin Falls, Valley, and Washington Counties.

-----  
WELDERS - Receive rate prescribed for craft performing operation for which welding is incidental.  
-----

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5(a)(1)(v)).  
-----

In the listing above, the "SU" designation means that rates listed under that identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- \* an existing published wage determination
- \* a survey underlying a wage determination
- \* a Wage and Hour Division letter setting forth a position on a wage determination matter
- \* a conformance (additional classification and rate)

ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations  
Wage and Hour Division  
U. S. Department of Labor  
200 Constitution Avenue, N. W.  
Washington, D. C. 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator  
U.S. Department of Labor  
200 Constitution Avenue, N. W.  
Washington, D. C. 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board  
U. S. Department of Labor  
200 Constitution Avenue, N. W.  
Washington, D. C. 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION

## General Decision Number ID000004

General Decision Number ID000004

Superseded General Decision No. ID990004

State: Idaho

Construction Type:

BUILDING

County(ies):

ADAMS	ELMORE	MADISON
BLAINE	FREMONT	MINIDOKA
BOISE	GEM	OWYHEE
CAMAS	GOODING	PAYETTE
CARIBOU	IDAHO	TETON
CASSIA	JEROME	TWIN FALLS
CLARK	LEMHI	VALLEY
CUSTER	LINCOLN	WASHINGTON

IDAHO COUNTY - South of the 46th Parallel

BUILDING CONSTRUCTION PROJECTS (does not include residential construction consisting of single family homes and apartments up to and including 4 stories)

Modification Number	Publication Date
0	02/11/2000

COUNTY(ies):

ADAMS	ELMORE	MADISON
BLAINE	FREMONT	MINIDOKA
BOISE	GEM	OWYHEE
CAMAS	GOODING	PAYETTE
CARIBOU	IDAHO	TETON
CASSIA	JEROME	TWIN FALLS
CLARK	LEMHI	VALLEY
CUSTER	LINCOLN	WASHINGTON

ELEC0291E 06/01/1999

	Rates	Fringes
ELMORE COUNTY		
ELECTRICIANS	21.63	5.67+4.4%

ELEC0449A 06/01/1999

	Rates	Fringes
CLARK, CUSTER, FREMONT, LEMHI, MADISON AND TETON COUNTIES		
ELECTRICIANS	21.15	5.89+5%

ELEC0449B 06/01/1999

	Rates	Fringes
CARIBOU COUNTY		
CONTRACTS \$250,000 AND UNDER		
ELECTRICIANS	18.00	5.89+5%
CONTRACTS OVER \$250,000		
ELECTRICIANS	21.15	5.89+5%

SUID1003A 02/01/1990

	Rates	Fringes
BRICKLAYERS:		
Area 1	10.00	
Area 2	11.75	
Area 3	12.00	
CARPENTERS:		
Area 1	9.88	2.03

Area 2	11.70	4.02
Area 3	11.33	
CEMENT MASONS:		
Area 1	8.00	2.41
Area 2	10.91	3.27
Area 3	8.00	2.41
ELECTRICIANS:		
Area 1	12.04	1.13
GLAZIERS:		
Area 2	8.00	1.25
Area 3	14.16	1.37
IRONWORKERS:		
Area 3	14.00	
LABORERS:		
Area 1	6.68	
Area 2	7.54	
Area 3	8.54	
PAINTERS:		
Area 1	10.46	
Area 3		
Brush	10.46	
PLUMBERS:		
Area 1	11.53	
Area 2	10.34	3.41
Area 3	13.02	
ROOFERS:		
Area 1	11.76	2.05
Area 2	12.96	1.55
Area 3	13.60	
SHEET METAL WORKERS:		
Area 1	11.05	1.19
Area 2	11.90	2.36
Area 3	12.68	1.80
POWER EQUIPMENT OPERATORS:		
Area 2:		
Backhoes	14.70	4.20
Cranes	13.60	
Loaders and Rollers	10.00	1.39
TRUCK DRIVERS:		
Area 2	8.40	1.39

AREA 1:  
Adams, Blaine, Boise, Camas, Cassia, Gem, Gooding, Idaho  
(south of 46th Parallel), Jerome, Lincoln, Minidoka, Owyhee,  
Payette, Twin Falls, Valley, and Washington Counties.

AREA 2:  
Caribou, Custer, Clark, Fremont, Lemhi, Madison, and Teton  
Counties

AREA 3:  
Elmore County

-----  
WELDERS - Receive rate prescribed for craft performing operation  
to which welding is incidental.  
-----

Unlisted classifications needed for work not included within the  
scope of the classifications listed may be added after award only  
as provided in the labor standards contract clauses (29 CFR 5.5(a)

#### WAGE DETERMINATION APPEALS PROCESS

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be:

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4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION

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**TECHNICAL SPECIFICATIONS DIVISION 1 •**  
**GENERAL REQUIREMENTS**

TABLE OF CONTENTS  
TECHNICAL SPECIFICATIONS

Section  
No.

Section Title

DIVISION 1 - GENERAL REQUIREMENTS

01001	Supplementary Requirements
01005	Site Specific Supplementary Requirements
01025	Payment
01035	Modification Procedures
01061	Environmental Protection
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01415	Metric Measurements
01451	Contractor Quality Control
01501	Construction Facilities and Temporary Controls
01701	Operations and Maintenance Manuals
01702	As Built Records and Drawings
01703	Warranty of Construction
01704	FORM 1354 CHECKLIST
01705	Equipment-in-Place List

## SECTION 01001

### SUPPLEMENTARY REQUIREMENTS

#### PART 1 GENERAL

##### 1.1 DEFINITIONS

The references listed below are to be defined as indicated wherever they may be used in the TECHNICAL SPECIFICATIONS.

"SUPPLEMENTARY REQUIREMENTS " shall be read to pertain to any of the sections of the DIVISION 1 as required by the content of the section or paragraph containing the reference.

Section "01300 SUBMITTALS" shall mean Section "01330 SUBMITTAL PROCEDURES."

Section "01400" CONTRACTOR QUALITY CONTROL shall mean Section "01451" CONTRACTOR QUALITY CONTROL.

##### 1.2 CONSTRUCTION SCHEDULING

The instructions for preparation and submittal of the Contractor-prepared Network Analysis System are found in SECTION 1320, PROJECT SCHEDULE.

##### 1.3 CORRESPONDENCE

1.3.1 All correspondence shall be addressed to the Contracting Officer, shall be serially numbered commencing with Number 1, with no numbers missing or duplicated and shall be forwarded in quintuplicate, as directed by the authorized representative of the Contracting Officer, and shall include an additional copy forwarded to a separate designated location. All copies provided shall be legible. Enclosures attached or transmitted with the correspondence shall also be furnished with the original and each copy. Each serial letter shall make reference to the contract name, contract number and shall have only one subject.

1.3.2 For submission of Contractor payment requests, See Section 01025, MEASUREMENT AND PAYMENT.

##### 1.4 CONTRACTOR'S FILES

Contractor shall maintain "Approved (Action Code "A") and "Approved Except as Noted (Action Code "B") shop drawing files in fabrication shops and at project sites for government use.

##### 1.5 AUDIO-VIDEO RECORDINGS

###### 1.5.1 General

The Contractor shall provide all equipment, materials, and trained personnel to visually and audibly record (video tape) all on site operations and maintenance (O&M) training sessions for this contract. The video technician shall be employed by a video production company that has been in business for a minimum of 2 years. The Contractor shall submit the resume of the technician and video production company. Also the Contractor shall submit for approval an agenda or an outline breakdown of the proposed presentation. Video tapes shall be produced in the VHS format. Audio shall be adjusted, filtered or otherwise controlled to ensure that the trainer can be understood at all times. Each system or piece of equipment shall be covered in a single tape or set of tapes which shall be correlated with the O&M manuals provided. Video tapes and their individual storage cases shall be identified with a

typewritten label showing the project, equipment or system, and contract number; this same information shall be provided as an introduction on each video tape. When two or more tapes are provided, they shall be submitted as a set in an appropriate storage container.

#### 1.5.2 Submittals

Prior to conducting the training sessions the following shall be submitted for approval:

- 1) A training plan consisting of the agenda or an outline breakdown of the proposed presentation and
- 2) The qualifications of the trainer and the video recording technician

Two copies of the video taped material shall be submitted to the Contracting Officer within 10 days after completion of video taping the training sessions.

#### 1.6 IDENTIFICATION OF EMPLOYEES AND MILITARY REGULATIONS

(a) The Contractor shall be responsible for compliance with all regulations and orders of the Commanding Officer of the Military Installation, respecting identification of employees, movements on installation, parking, truck entry, and all other military regulations which may affect the work.

(b) The work under this Contract is to be performed at an operating Military Installation with consequent restrictions on entry and movement of nonmilitary personnel and equipment.

#### 1.7 PRESERVATION OF HISTORICAL, ARCHEOLOGICAL AND CULTURAL RESOURCES (1985 JAN OCE):

(a) Construction of this project is in an area of Southern Idaho within which are numerous culturally significant areas. To the maximum extent possible, such areas have been identified during the EIS process and the site location and road alignment chosen to avoid impact to these cultural resources. However, all Contractor personnel shall be required to undergo training to familiarize themselves with the existence of such resources. Disturbance of any such resource is expressly not allowed, and can result in civil fines and penalties of up to \$100,000. Should any employee of the Contractor identify such a resource within the construction limits, the Contractor shall notify the Contracting Officer's Representative and proceed around the area or to another portion of the work as approved by the COR. The Air Force will conduct the first training session for the Contractor upon award of the Contract. The Air Force will also make available to the Contractor a videotape outlining his responsibilities with respect to identifying, avoiding impact to, and notifying appropriate authorities in the event that such culturally sensitive areas are encountered within the designated construction limits. In the event that new employees are hired, the Contractor shall certify that they are appropriately trained within ten days of the time each employee commences work on this project.

(b) Several known archaeological sites have been identified by the Government. These sites are shown on the drawings. The disposition of these known sites shall occur under separate contract. The Contractor shall coordinate construction activity in the areas of the known sites with the Contracting Officer at least 5 working days prior to initiating the work, and avoid these areas during the times indicated. Unexpected archaeological finds may occur during construction. The Contractor can generally expect the following kinds of archaeological resources: lithic scatters, rock piles or alignments; prehistoric occupation debris (see below); rock art; human skeletal remains.

(c) Prehistoric Occupation Debris. If, during construction activities, the Contractor observes evidence of prehistoric occupation, such as bone fragments, charcoal, fire-modified rock and cryptocrystalline flaking debris, in a place not previously identified, the Contractor shall cease work in the area of the find, leaving all objects in place. An on-site inspection of the site by Government cultural resource specialists

will occur within 48 hours of receiving notice to determine their significance and what, if any, special disposition of the find should be made.

(d) Human Skeletal Remains. If, during construction activities, the Contractor observes human skeletal remains, the Contractor shall notify the Contracting Officer within 4 hours of the find. The Contractor shall cease all activities in the area of the discovery and redirect work to other areas. Construction activity in the area may resume after 30 days from notification to the Contracting Officer. Disposition shall take place within 30 days of the find, in conformity with Native American Graves Protection.

## 1.8 SPECIAL SAFETY REQUIREMENTS:

All construction activities shall be conducted in strict compliance with the Corps of Engineers Safety and Health Requirements Manual EM 385-1-1, September 1996, and Occupational Safety and Health Administration regulations, as applicable.

1.8.1 In addition to Safety and Health Requirements Manual EM 385-1-1, and all applicable OSHA standards, the Contractor shall comply with the requirements listed below. Paragraph numbers refer to EM 385-1-1 or are added thereto.

(a) Paragraph 01.A.12: Add new paragraph: Safety Personnel. The Contractor shall designate a person on his staff to manage the Contractor's safety and accident prevention program. This person will provide a point of contact for the Contracting Officer on matters of job safety, and shall be responsible for ensuring the health and safety of on site personnel.

(b) Paragraph 01.D.02, revise as follows:

(1) Replace paragraph 01.D.02c with the following:  
"c. Property damage in excess of \$2,000.00

(2) Add new paragraph d as follows:  
"An injury resulting in a lost workday, not including the day of injury."

## 1.9 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER (ER 415-1-15 31 OCT 89)

This Paragraph specifies the procedure for the determination of time extensions for unusually severe weather in accordance with the CONTRACT CLAUSE entitled "Default (Fixed Price Construction)". In order for the Contracting Officer to award a time extension under this clause, the following conditions must be satisfied:

1.9.1 The weather experienced at the project site during the contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the project location during any given month.

1.9.2 The unusually severe weather must actually cause a delay to the completion of the project. The delay must be beyond the control and without the fault or negligence of the contractor.

1.9.3 The following schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the project location and will constitute the base line for monthly weather time evaluations. The contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities.

MONTHLY ANTICIPATED ADVERSE WEATHER DELAY  
WORK DAYS BASED ON (5) DAY WORK WEEK

<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>
16	11	8	3	3	2	0	1	1	3	9	14

1.9.4 Upon acknowledgment of the notice to proceed (NTP) and continuing throughout the contract, the contractor will record on the daily QCQ report, the occurrence of adverse weather and resultant impact to normally scheduled work. Actual adverse weather delays must prevent work on critical activities for 50 percent or more of the contractor's scheduled work day.

1.9.5 The number of actual adverse weather delay days shall include days impacted by actual adverse weather (even if adverse weather occurred in previous month), be calculated chronologically from the first to the last day of each month, and be recorded as full days. If the number of actual adverse weather delay days exceeds the number of days anticipated in paragraph 1.8.3, above, the Contracting Officer will convert any qualifying delays to calendar days, giving full consideration for equivalent fair weather work days, and issue a modification in accordance with the contract clause entitled "Default (Fixed Price Construction)".

1.10 PERMITS AND CONTRACTOR RESPONSIBILITIES

It will be the responsibility of the Contractor to obtain all permits/licenses required for this project. See the Contract Clause paragraph entitled PERMITS AND RESPONSIBILITIES. Coordinate septic system permit applications with 366 CES/CEV prior to submission to the Southwest Health District.

PARTS 2 AND 3 NOT USED

END OF SECTION

## SECTION 01005

### SITE SPECIFIC SUPPLEMENTARY REQUIREMENTS

#### 1. CONDUCT OF WORK:

##### 1.1 COORDINATION AND ACCESS TO SITE

1.1.1 Coordination with using agencies shall be made through the Contracting Officer to assist the Contractor in completing the work with a minimum of interference and inconvenience.

Coordination with other contractors, who will be working in the vicinity of Three Creek during the summer of 2000, shall also be made through the Contracting Officer.

1.1.2 Construction of this project is within areas of Southern Idaho owned by the U.S. Government and by the state of Idaho. The Bureau of Land Management and the state of Idaho have issued grazing permits and leases on these lands. Construction of the project shall not interfere with the rights of ranchers to use the lands for grazing cattle. The Contractor shall be aware of the terms and conditions of the BLM permits and state leases, schedule of grazing operations and ranching infrastructure, such as fencing and pipelines, and shall coordinate with the permit/lease holders to avoid interference with their grazing operations and damage to ranching infrastructure. The Contracting Officer will provide copies of the BLM permits and state leases to the Contractor.

1.1.3 The Contractor shall ensure that all its operations are within the rights of way and withdrawn lands as shown on the sketches, attached to the Special Clauses, Section 00800. It is essential that the contractor limit the disturbances within the ROW's to an absolute minimum and to only the specific road width area. The specific design will be subject to scrutiny on this issue.

1.1.4 The Contractor shall provide a list of all employees with driver's license and social security numbers prior to the start of construction.

1.1.5 Work hours in the construction area will be restricted to 7:30 a.m. to 4 p.m. daily, Monday through Friday, excluding holidays. Work hours other than as specified above shall be coordinated with and approved by the Contracting Officer.

1.1.6 Contractor's workmen shall have on either a uniform with a firm name and the workman's last name or shall have a badge pinned on with both the firm name and the workman's photograph and full name.

##### 1.2 PROTECTION OF GOVERNMENT PROPERTY

In addition to requirements of the CONTRACT CLAUSES, Contractor shall protect all Government and state of Idaho property within the sites, buildings and areas in which he is working. Do not disturb areas outside the confines of the specific site area. All areas disturbed shall be restored to the original natural state of condition.

### 1.3 SAFETY AND REGULATORY REQUIREMENTS

Due to the nature of the environment, the risk for fire can be extremely high within the construction areas. The Contractor shall take all necessary precautions to minimize the risk of fires. The Contractor shall be required to equip all vehicles with spark arrestors, to carry shovels and fire extinguishers in all vehicles in the construction areas, and to be capable of maintaining radio contact with the appropriate designated authorities from all vehicles. All personnel shall be trained in the use of the equipment and the procedures to be followed, as indicated in the Contractor's Safety Plan, in the event of a fire. During the fire season, the Contractor's attention is directed to the fact that the heat from vehicle engines near dry brush or discarded cigarette butts may be enough to ignite a fire. The Contractor shall report all fires, even those that have been successfully contained by the Contractor's personnel, to the appropriate authorities. The Contractor shall be required to be familiar with, and conform to the requirements of the Bureau of Land Management in the prevention and containment of fires on public range lands, and may be subject to spot checks the Mt. Home AFB Fire Department and the Bureau of Land Management personnel. The Contractor shall be required to submit a Fire Protection Plan, and will be held responsible for any damages incurred due to fires resulting from negligence on his part or on the part of his employees.

1.3.1 Road lane closures shall be coordinated with the Contracting Officer at least 14 days in advance.

1.3.2 Broken concrete and masonry, and waste aggregate shall be disposed of on disposal sites, as directed by the Contracting Officer.

1.3.3 Fire extinguishers will be required on construction equipment. A 10 ABC minimum rating is required for fire extinguishers.

1.3.4 Blasting is prohibited on the property, unless otherwise approved by Contracting Officer.

### 1.4 GOVERNMENT FIELD OFFICE

The Contractor shall provide two temporary field office buildings for the exclusive use of Government personnel during the contract period. The building shall be in locations (one in the Juniper Butte area, the other near the town of Bruneau, ID) designated by the Contracting Officer. The building shall be mounted on a trailer or skid base and contain 150 feet of floor space. The Government office space may be in the building used for the Contractor's field office but with separate room and access points. The building shall be insulated appropriate to the climate and the Contractor shall furnish and maintain adequate electric lights and wall outlets, heat, air-conditioning, and drinking water (water dispenser) for the building, and shall perform any necessary maintenance of the building. The building shall be furnished with one desk, 5 feet long by 3 feet wide, with a side drawer and a center drawer that can be locked; and a table 3 feet by 4 feet minimum, suitable for laying out full-size contract plans. Two chairs and one stool shall be furnished. A file cabinet with three drawers (letter size width) shall be furnished. The building shall have two windows and shall have a door with a lock set with two keys. Each window shall have not less than 6 square feet of glass area, and the door shall be 2 feet, 8 inches wide by 6 feet, 8 inches high. Telephone service, either by a hardline or cellular, shall be provided for the duration of time of the contract. The Government will pay for the monthly cellular service fees and long distance calls made by Government personnel. Suitable enclosed sanitary toilet and lavatory facilities shall be furnished in the immediate vicinity of the building and kept clean by the



Contractor. The Contractor shall provide weekly room cleaning service and trash removal. The Contractor shall also, at any time it relocates its office facility, relocate the Government field office to a new location, if so requested by the Contracting Officer. Field office building will remain property of the Contractor and shall be removed from site upon completion of project. (As an alternative, the office space may be a lockable room within a larger structure. This office space shall meet all other requirements of this paragraph.)

END OF SECTION

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## SECTION 01025

### PAYMENT

#### PART 1 GENERAL

##### 1.1 GENERAL

The contract price for each item shall constitute full compensation for furnishing all plant, labor, materials, appurtenances, and incidentals and performing all operations necessary to construct and complete the items in accordance with these specifications and the applicable drawings, including surveying performed by the Contractor. Payment for each item shall be considered as full compensation, notwithstanding that minor features may not be mentioned herein. Work paid for under one item will not be paid for under any other item. No separate payment will be made for the work, services, or operations required by the Contractor, as specified in DIVISION 1, GENERAL REQUIREMENTS, to complete the project in accordance with these specifications; all costs thereof shall be considered as incidental to the work.

##### 1.2 PAYMENT

###### 1.2.1 ITEM 0001 (BASE ITEM)

Payment will be made at the contract lump sum price for Base Item 0001, All Work for Design and Construction of ETI Phase II Sites, Except for Base Items 0002, 0003 and 0004, and Optional Items 0005, 0006, 0007, 0009 and 0010, payment of which shall constitute compensation for Item 0001, complete.

###### 1.2.2 ITEM 0002 (BASE ITEM)

Payment will be made at the contract lump sum price for Base Item No. 0002, All Work for As-Built Drawings; payment of which shall constitute full compensation of Item No. 0002 complete. No partial or total payment will be made for this item until the as-built drawings, both marked up blue prints and electronic files are fully approved by the Government (A or B action) and all copies of approved drawings and electronic media received by the Government.

###### 1.2.3 ITEM 0003 (BASE ITEM)

Payment will be made at the contract lump sum price for Base Item No. 0003, All Work for O&M Manuals; payment of which shall constitute full compensation of Item No. 0003 complete. No partial or total payment will be made for this item until all O&M manuals are fully approved by the Government (A or B action) and all copies of final manuals are received by the Government in their final binders.

#### 1.2.4 ITEM 0004 (BASE ITEM)

Payment will be made at the contract lump sum price for Base Item No. 0004, All Work for Form 1354 Checklist and Equipment in Place List; payment of which shall constitute full compensation of Item No. 0004 complete. No partial or total payment will be made for this item until both the 1354 Checklist and Equipment in Place List are fully approved by the Government (A or B action) and all copies of approved lists received by the Government.

#### 1.2.5 ITEM 0005 (OPTIONAL ITEM)

Payment will be made at the contract lump sum price for Optional Item 0005, Design and Construction of ETI Phase II ¼ Acre and 1 Acre Emitter Sites, Including Roads, payment of which shall compensation for Item 0005, complete.

#### 1.2.6 ITEM 0006 (OPTIONAL ITEM)

Payment will be made at the contract lump sum price for Optional Item 0006, Design and Construction of ETI Phase II Site ND-7, payment of which shall compensation for Item 0006, complete.

#### 1.2.7 ITEM 0007 (OPTIONAL ITEM)

Payment will be made at the contract lump sum price for Optional Item 0007, Bird Deterrent Balls at Phase II Juniper Butte Drop Site Reservoir, payment of which shall compensation for Item 0007, complete.

#### 1.2.8 ITEM 0008 (OPTIONAL ITEM)

Payment will be made at the contract lump sum price for Optional Item 0008, All Work for Design and Construction of ETI Phase III Sites Except for Optional Items 0009 and 0010, payment of which shall compensation for Item 0008, complete.

#### 1.2.9 ITEM 0009 (OPTIONAL ITEM)

Payment will be made at the contract lump sum price for Optional Item 0009, All Work for Design and Construction of Alternative Septic Systems at One 1-Acre Site (For Areas of Shallow Rock Depth), payment of which shall compensation for Item 0009, complete.

#### 1.2.10 ITEM 0010 (OPTIONAL ITEM)

Payment will be made at the contract lump sum price for Optional Item 0010, All Work for Design and Construction of Alternative Septic Systems at One Additional 1-Acre Site (For Areas of Shallow Rock Depth), payment of which shall compensation for Item 0010, complete.

### 1.3 PROGRESS PAYMENT INVOICE

Requests for payment shall be submitted in accordance with Federal Acquisition Regulations (FAR) Subpart 32.9, entitled "PROMPT PAYMENT", and Paragraphs 52.232-5 and 52.232-27, entitled "Payments Under Fixed-Price Construction Contracts", and "Prompt Payment for Construction Contracts", respectively. In addition each request shall be submitted in the number of copies and to the designated billing office as shown in the Contract.

1.3.1 When submitting payment requests, the Contractor shall complete Blocks 1 through 12 of the "PROGRESS PAYMENT INVOICE" Form as directed by the Contracting Officer. (A sample form is attached at the end of this Technical Specification Section.) The completed form shall then become the cover document to which all other support data shall be attached.

1.3.2 One additional copy of the entire request for payment, to include the "PROGRESS PAYMENT INVOICE" cover document, shall be forwarded to a separate address as designated by the Contracting Officer.

1.3.3 The Contractor shall submit with each pay request, a list of subcontractors that have worked during that pay period. The listing shall be broken down into weeks, identifying each subcontractor that has worked during a particular week, and indicate the total number of employees that have worked on site for each subcontractor for each week. The prime Contractor shall also indicate the total number of employees for its on site staff for each week.

PARTS 2 and 3 NOT USED

**PROGRESS PAYMENT INVOICE**

See Federal Acquisition Regulations (FAR) 32.900, 52.232-5, & 52.232-27

1. PROJECT AND LOCATION	2. DATE
3. CONTRACTOR NAME AND ADDRESS (Must be the same as in the Contract)	4. CONTRACT NO.  5. INVOICE NO.
6. DESCRIPTION OF WORK	7. PERIOD OF PERFORMANCE  From:  To:
8. DISCOUNT TERMS	
9. OFFICIAL TO WHOM PAYMENT IS TO BE FORWARDED Name: Title: Phone: ( ) -	10. OFFICIAL TO BE NOTIFIED OF DEFECTIVE INVOICE Name: Title: Phone ( ) -
<p><b>11. CERTIFICATION: I hereby certify, to the best of my knowledge and belief, that</b></p> <p><b>(1) The amounts requested are only for the performance in accordance with the specifications, terms, and conditions of this contract;</b></p> <p><b>(2) Payments to subcontractors and suppliers have been made from previous payments received under the contract, and timely payments will be made from the proceeds of the payment covered by this certification,</b></p> <p><b>in accordance with subcontract agreements and the requirements of Chapter 39 of Title 31, United States Code;</b></p> <p><b>and</b></p> <p><b>(3) This request for progress payment does not include any amounts which the prime contractor intends to withhold or retain from a subcontractor or supplier in accordance with the terms and conditions of the subcontract.</b></p>	
<div style="display: flex; justify-content: space-between;"> <span>_____</span> <span>_____</span> <span>_____</span> </div> <div style="display: flex; justify-content: space-between;"> <span><b>(Signature)</b></span> <span><b>(Title)</b></span> <span><b>(Date)</b></span> </div>	
<p><b>12. OTHER INFORMATION OR DOCUMENTATION</b> required by Contract. Provide two (2) copies of each (check and attach if applicable):</p> <p>_____ Updated Progress Chart/Schedule</p> <p>_____ Progress Narrative</p> <p>_____ Certified Payrolls (submitted weekly)</p> <p>_____ Safety Exposure Report</p> <p>_____ Updated Submittal Register</p> <p>_____ Progress Photos</p> <p>_____ Subcontractor/Employee Listings</p>	<p align="center"><b>(FOR GOVERNMENT USE ONLY)</b></p> <p>Retainage: _____%    Amt: \$ _____</p> <p>Withholdings: \$ _____</p> <p>Reason: _____</p> <p>_____</p> <p>Following items are current:</p> <p>As-Builts        _____ Yes    _____ No</p> <p>O &amp; M Manuals    _____ Yes    _____ No</p> <p>1354 Data        _____ Yes    _____ No</p> <p>Submittal Register    _____ Yes    _____ No</p>

**END OF SECTION**

## SECTION 01035

### MODIFICATION PROCEDURES

#### PART 1 GENERAL

##### 1.1 PROPOSED PROJECT MODIFICATIONS

Price proposals for proposed modifications shall be submitted in accordance with the requirements of the Contract Clause MODIFICATION PROPOSALS - PRICE BREAKDOWNS. If change order work impacts or delays other unchanged contract work, the costs of such impacts or delays shall be included in the proposals and separately identified. Additional instructions for submitting price proposals can be found in NPSP-415-1-1, INSTRUCTION AND INFORMATION FOR CONTRACTORS, a copy of which will be furnished to the Contractor at the Preconstruction Conference. For information applicable to equipment rates used in contract modifications, refer to 00800 - SPECIAL CLAUSES, clause "EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE".

#### PART 2 PRODUCTS (NOT USED)

#### PART 3 EXECUTION (NOT USED)

END OF SECTION

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## SECTION 01061

### ENVIRONMENTAL PROTECTION

#### PART 1 GENERAL

##### 1.1 SCOPE

This Section covers prevention of environmental pollution and damage as the result of construction operations under this contract. No separate payment will be made for work covered under this section. For the purpose of this specification, environmental pollution, and damage is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species to importance to man; or degrade the utility of the environment for aesthetic, cultural, and/or historical purposes. The control of environment pollution and damage requires consideration of air, water, and land, and includes management of visual aesthetics, noise, and solid waste, as well as other pollutants.

The Contractor's personnel shall be trained in all phases of environmental protection. The training shall include methods of detecting and avoiding pollution, familiarization with pollution standards, both statutory and contractual, and installation and care of devices, vegetative covers and instruments required for monitoring purposes to ensure adequate and continuous environmental pollution control.

Construction of this project is in an area of Southern Idaho within which are numerous environmentally significant areas. To the maximum extent possible, such areas have been identified during the EIS process and the site location and road alignment chosen to avoid impact to these environmental resources. However, all contractor personnel will be required to undergo training to familiarize themselves with the existence of such resources. Disturbance of any such resource is expressly not allowed. Should any employee of the Contractor identify such a resource within the construction limits, the Contractor shall notify the Contracting Officer's Representative and proceed around the area or to another portion of the work, as approved by the COR. The Air Force will conduct the first training session for the Contractor upon award of the Contract. The Air Force will also make available to the Contractor a videotape outlining his responsibilities with respect to identifying, avoiding impact to, and notifying the appropriate authorities in the event that such environmentally sensitive areas are encountered within the designated construction limits. In the event that new employees are hired, the Contractor shall certify that they are appropriately trained within ten days of the time each employee commences work on this project.

The Contractor shall perform the work minimizing environmental pollution and damage as the result of construction operations. Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the utility of the environment for aesthetic, cultural and/or historical purposes. The control of environmental pollution and damage requires consideration of land, water, and air and includes the management of visual aesthetics, noise, solid waste, as well as other pollutants. The environmental resources within the project

boundaries and those affected outside the limits of permanent work shall be protected during the entire duration of this contract.

#### 1.1.1 Environmental Protection Plan

The Contractor shall submit an environmental protection plan within 15 days after receipt of the notice to proceed. A copy of the plan shall also be submitted to BLM for their information. Approval of the Contractor's plan will not relieve the Contractor of responsibility for adequate and continuing control of pollutants and other environmental protection measures. The environmental protection plan shall include, but shall not be limited to, the following:

- a. A list of Federal, state and local laws, regulations, and permits concerning environmental protection, pollution control and abatement that are applicable to the Contractor's proposed operation and the requirements imposed by those laws, regulations and permits. A list of potentially applicable laws, regulation and permits can be found in the "Enhanced Training in Idaho Environmental Impact Statement", Volume 3, Appendix I, and record of decision.
- b. Methods for protection of features to be preserved within authorized work areas like trees, shrubs, vines, grasses and ground cover, landscape features, air and water quality, fish and wildlife, soil, historical, archaeological, and cultural resources.
- c. Procedures to be implemented to provide the required environmental protection, to comply with the applicable laws and regulation, and to correct pollution due to accident, natural causes, or failure to follow the procedures of the environmental protection plan.
- d. Location of the off-site solid waste disposal area.
- e. Drawings showing locations of any proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials.
- f. Environmental monitoring plans for the job site, including land, water, air and noise monitoring.
- g. Traffic control plan including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather, and the amount of mud transported onto paved public roads by vehicles or runoff.
- h. Methods of protecting surface and ground water during construction activities.
- i. Plan showing the proposed activity in each portion of the work area and identifying the areas of limited use or nonuse. Plan should include measures for marking the limits of use areas.
- j. A recycling and waste prevention plan with a list of measures to reduce consumption of energy and natural resources; for example: the possibility to shred fallen trees and use them as mulch shall be considered as an alternative to burning or burial.

- k. Training for Contractor's personnel during the construction period.

### 1.1.2 Permits

The Contractor shall obtain all needed permits or licenses. The Government will not obtain any permits for this project, see Contract Clause PERMITS AND RESPONSIBILITIES. The U.S. Environmental Protection Agency, through the national pollutant discharge elimination system (NPDES), requires general permits, and a notice of intent, and a notice of discontinuation. The Contractor shall be responsible for implementing the terms and requirements of the appropriate permits as needed and for payment of all fees.

### 1.1.3 Pre-Construction Survey

Prior to starting any onsite construction activities (but, following the marking of work area limits and monuments) the Contractor and the Contracting Officer shall make a joint condition survey. After which, the Contractor shall prepare a brief report on a layout plan giving an indication regarding the condition of trees, shrubs and grassed areas immediately adjacent to work sites and adjacent to the assigned storage area and access routes as applicable. This report will be signed by both the Contracting Officer and the Contractor upon mutual agreement of its accuracy and completeness.

### 1.1.4 Meetings

The Contractor shall meet with representatives of the Contracting Officer to alter the environmental protection plan as needed for compliance with the environmental pollution control program.

## 1.2 QUALITY CONTROL

The Contractor shall establish and maintain quality control for environmental protection of all items set forth herein. The Contractor shall record any problems in complying with laws, regulations, and ordinances, and corrective action taken.

### 1.2.1 Subcontractors

Assurance of compliance with this Section by subcontractors will be the responsibility of the Contractor.

## 1.3 NOTIFICATION

When the Contracting Officer notifies the Contractor in writing of any observed noncompliance with Federal, state, or local laws, regulations, or permits, the Contractor shall, after receipt of such notice, inform the Contracting Officer of proposed corrective action and take such action as may be approved. If the Contractor fails to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions will be granted or costs or damage allowed to the Contractor for any such suspension.

## 1.4 PROTECTION OF ENVIRONMENTAL RESOURCES

The environmental resources within the project boundaries and those affected outside the limits of permanent work under this contract shall be protected during the entire period of this contract. Environmental protection shall be as stated in the following subparagraphs:

### 1.4.1 Protection of Land Resources

The Contractor shall confine all activities to areas defined by the drawings and specifications. Except in areas indicated on the drawings or specified to be cleared, the Contractor shall not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and land forms without permission. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. Where such emergency use is permitted, the Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following sub-paragraphs. Stone, earth or other material displaced into uncleared areas shall be removed.

#### 1.4.1.1 Work Area Limits

The Contractor shall confine all activities to areas as defined by the drawings and specifications, and shall remain within the rights of way and withdrawn lands as shown on sketches attached to the SPECIAL CLAUSE, Section 00800. Contractor shall mark all work areas as needed to assure personnel comply with this requirement. The Contracting Officer will assist the Contractor by providing staked reference points for locating the roads and the respective project sites. The Contractor shall mark or fence any areas within the general work area, which are to be saved and protected. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted during darkness, the markers shall be visible. The Contractor's personnel shall be knowledgeable of the purpose marking and/or protecting particular objects. It is essential that the contractor limit the disturbance within the ROW's to the absolute minimum and to only the specific road width area. The specific design will be subject to scrutiny on this issue.

#### 1.4.1.2 Landscape

Trees, shrubs, vines, grasses, land forms and other landscape features identified during the joint condition survey to be preserved, shall be clearly identified by marking, fencing, or wrapping with boards, or any other approved techniques.

#### 1.4.1.3 Unprotected Erodable Soils

Earthwork brought to final grade shall be finished as indicated. Side slopes and back slopes shall be protected as soon as practicable upon completion of rough grading. All earthwork shall be planned and conducted to minimize the duration of exposure of unprotected soils. Except in cases where the constructed feature obscures borrow areas, quarries, and waste material areas, these areas shall not initially be totally cleared. Clearing of such areas shall progress in reasonably sized increments as needed to use the developed areas as approved by the Contracting Officer.

#### 1.4.1.4 Disturbed Areas

The Contractor shall effectively prevent erosion and control sedimentation through approved methods including, but not limited to, the following:

- a. Retardation and control of runoff. Runoff from the construction site or from storms shall be controlled, retarded, and diverted to protect drainage courses by means of diversion ditches, benches, berms, and by any measures required by area wide plans under the Clean Water Act.
- b. Erosion and sedimentation control devices. The Contractor shall construct or install temporary and permanent erosion and sedimentation control features as indicated on the drawings. Berms, dikes, drains, sedimentation basins, grassing, and mulching shall be maintained until permanent drainage and erosion control facilities are completed and operative.
- c. Sediment basins. Sediment from construction areas shall be trapped in temporary or permanent sediment basins in accordance with the drawings. The basins shall accommodate the runoff of a local 10 year storm. After each storm, the basins shall be pumped dry and accumulated sediment shall be removed to maintain basin effectiveness. Overflow shall be controlled by paved weirs or by vertical overflow pipes. The collected topsoil sediment shall be reused for fill on the construction site, and/or stockpiled for use at another site. The Contractor shall institute effluent quality monitoring programs as required by state and local environmental agencies.

#### 1.4.2 Endangered Species

Endangered plants and animals shall not be disturbed. Contractor shall notify the Contracting Officer when an endangered plant or animal has been identified.

The Contractor shall erect a temporary fence around endangered plants to protect them from construction activity. A sign shall be placed that reads: "Do Not Enter". Following completion of the construction in the vicinity of the endangered plant, the Contractor shall remove the fence from the site. The Contractor shall take care at all times to avoid any disturbance of ground within five feet of plant.

The Contractor shall avoid any disturbance of sage grouse and minimize any impact to sage grouse habitat. Known sage grouse habitat within or near construction areas are indicated below. Destruction of sagebrush in these areas shall be minimized, and construction activities limited in accordance with the criteria below:

## SAGE GROUSE AVOIDANCE CRITERIA FOR ETI CONSTRUCTION

### Sage Grouse Habitat on or Near Construction Sites

Location	Distance	Habitat Description	Avoidance Period
Emitter AV & No Drop 4	On site (Wintering) 1 ½ miles (Leks)	3 leks + Wintering on site	1 Dec-30 June
Emitter BD	2 miles	4 Leks	1 Dec-31 May
Emitter AQ	3 miles	1 Lek	1 Dec-31 May
Emitter AI		Lek	15 Feb-30 June
Emitter Site BA, BC, BG		Wheatgrass, big sagebrush, wintering	1 Dec-15 Feb
Juniper Butte, Eastern most sections only, T13S.R10E, Sect 4,9,16,21	1 mile	1 Lek	1 Dec-15 Feb
AF	1.5 miles	2 Leks	15 Feb-30 June
ND-7 & AG	2 Miles	1 Lek	15 Mar-31 May

Three levels of avoidance necessary at each site (reference also Biology Mitigation Plan):

1. July- November: Proceed with construction as normal. Minimize sagebrush destruction.
2. 1 Dec-15 Feb and 15 Feb-30 June: Allow construction with following restrictions; coordinate with Contracting Officer:
  - a. Start construction after 9 AM
  - b. Minimize construction noise
  - c. Minimize sagebrush destruction
3. 1 Dec-30 June: No construction activity at sites ND-4 and AV.
4. 1 Dec-15 Feb: Construction activity prohibited at sites BA, BC, and BG.
5. 1 Dec-31 May: No construction activity at sites BD and AQ.
6. 15 Feb-30 June: No construction activity at sites AF and AI.
7. 15 Mar-31 May - No construction activity at sites ND-7/AG.

Site ND-4 is a sensitive area relative to sage grouse and contractor shall coordinate his work accordingly with Contracting Officer.

#### 1.4.3 Refuse Disposal and Cleanup

Solid waste is rubbish, debris, waste materials, garbage and other discarded solid materials (excluding such organic materials as brush or tree stumps resulting from clearing operations and hazardous waste as defined in following paragraphs). Solid waste shall be placed in containers and disposed on a regular schedule. All handling and disposal shall be conducted in such a way as to prevent spillage and contamination. The Contractor shall transport all solid waste off Government property and dispose in compliance with Federal, state and local requirements. The cost of solid waste disposal, such as transportation, handling, dumping fees as applicable, and similar cost, shall be included in the contract price.

#### 1.4.4 Fire Hazard

Cloths, cotton waste, and other combustible materials that might constitute a fire hazard shall be placed in closed metal containers and removed from the site(s) at the end of each day. See Section 01005, SITE SPECIFIC SUPPLEMENTARY REQUIREMENTS for additional coordination, safety, and regulatory requirements related to fire hazard.

#### 1.4.5 Restrictions

The Contractor will not be permitted to deposit refuse in existing garbage cans or refuse dumpsters. Cleaners shall not be poured, drained, or washed into plumbing fixtures or sanitary or storm sewers. Debris, dirt, dust, and stains attributable to or resulting from the work effort shall be removed, cleaned, or effaced by the Contractor to the satisfaction of the Contracting Officer prior to acceptance of the job. Refuse shall not be burned. Burning of vegetation or tree stumps will not be allowed unless the work site is in an area approved for burning.

#### 1.4.6 Disposal of Chemical or Hazardous Waste

Chemical or hazardous waste shall be stored in corrosion-resistant containers, removed from work area, and disposed of in accordance with Federal, state and local regulations.

#### 1.4.7 Disposal of Discarded Materials

Discarded materials, other than those which can be included in the solid waste category, shall be handled as directed, but in conformance with Federal, State, and local regulations.

#### 1.4.8 Protection of Water Resources

The Contractor shall keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters. Toxic or hazardous chemicals shall not be applied to soil or vegetation when such application may cause contamination of the fresh water reserve. Monitoring of water areas affected by construction shall be the Contractor's responsibility. All water areas affected by construction activities shall be monitored by the Contractor.

##### 1.4.8.1 Washing and Curing Water

Wastewater directly derived from storm water run off over stripped soils shall not be allowed to enter water areas. Wastewater shall be collected and placed in retention pools where suspended material can be settled.

##### 1.4.8.2 Fish and Wildlife

The Contractor shall minimize interference with, disturbance to, and damage of fish and wildlife. Species that require specific attention along with measures for their protection shall be listed by the Contracting Officer prior to beginning of construction operations.

#### 1.4.9 Air Resources

Equipment operation and activities or processes performed by the Contractor in accomplishing the specified construction shall be in accordance with the State's rules and all Federal emission and performance laws and standards. Ambient Air Quality Standards set by the Environmental Protection Agency shall be maintained. Monitoring of air quality shall be the Contractor's

responsibility. All air areas affected by the construction activities shall be monitored by the Contractor. Monitoring results will be periodically reviewed by the Government to ensure compliance.

#### 1.4.9.1 Particulates

Dust particles; aerosols and gaseous by-products from construction activities; and processing and preparation of materials, such as from asphaltic batch plants; shall be controlled at all times, including weekends, holidays and hours when work is not in progress. The Contractor shall maintain excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and other work areas within or outside the project boundaries free from particulates which would cause the air pollution standards to be exceeded or which would cause a hazard or a nuisance. Sprinkling, chemical treatment of an approved type, light bituminous treatment, baghouse, scrubbers, electrostatic precipitators or other methods will be permitted to control particulates in the work area. Sprinkling, to be efficient, must be repeated to keep the disturbed area damp at all times. The Contractor must have sufficient, competent equipment available to accomplish these tasks. Particulate control shall be performed as the work proceeds and whenever a particulate nuisance or hazard occurs.

#### 1.4.9.2 Hydrocarbons and Carbon Monoxide

Hydrocarbons and carbon monoxide emissions from equipment shall be controlled to Federal and state allowable limits, at all times.

#### 1.4.9.3 Odors

Odors shall be controlled at all times for all construction activities, processing and preparation of materials.

### 1.5 SOUND INTRUSIONS

The Contractor shall keep construction activities under surveillance and control to minimize environment damage by noise. Noise shall be muted to not disturb sage grouse. Equipment and the generator set as a minimum shall have factory specified mufflers.

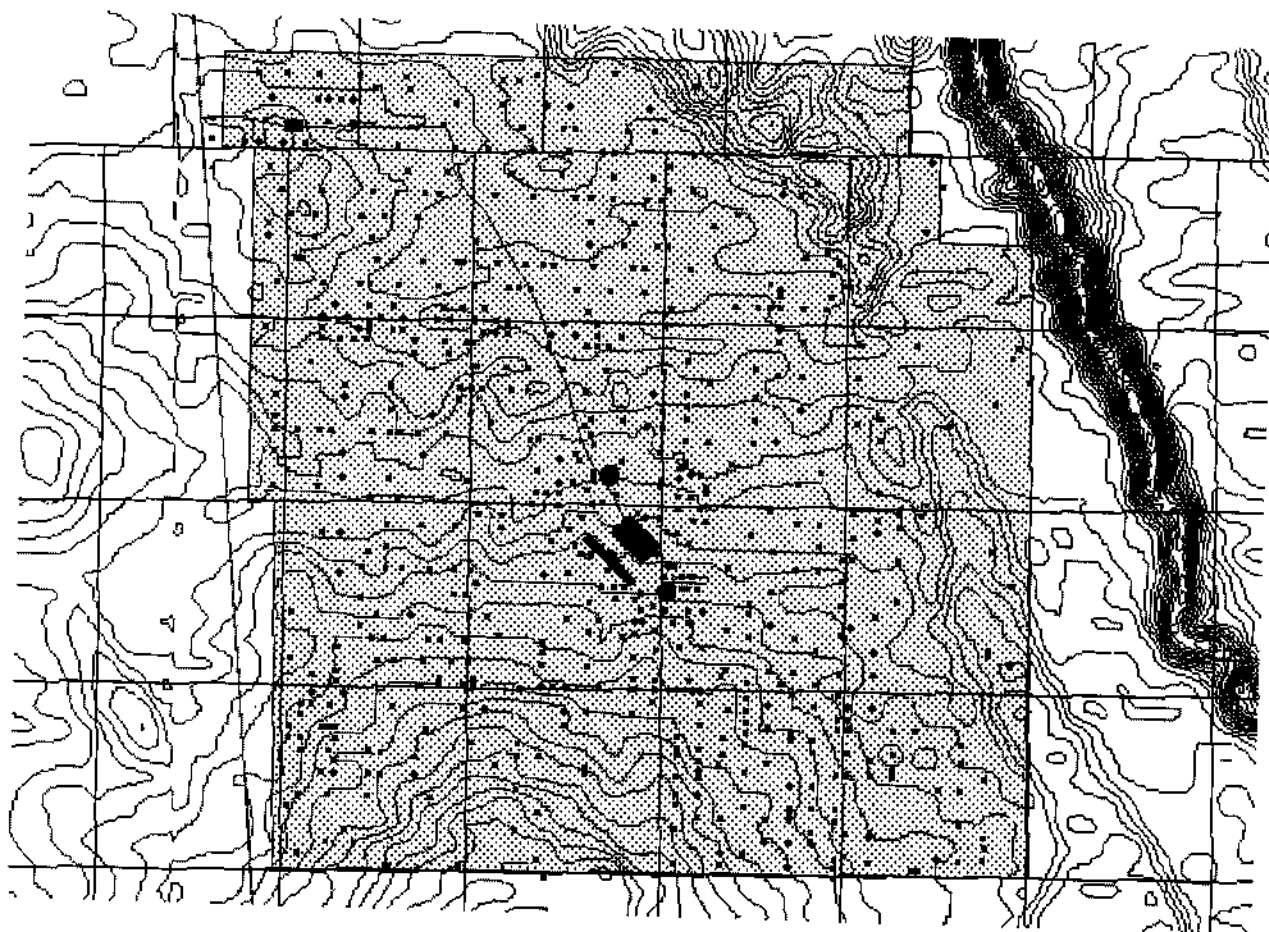
### 1.6 MAINTENANCE OF POLLUTION CONTROL FACILITIES

The Contractor shall maintain all constructed facilities and portable pollution control devices for the duration of the contract or for that length of time construction activities create the particular pollutant.

### 1.7 PREVIOUSLY USED EQUIPMENT

The Contractor shall thoroughly clean all construction equipment previously used at other sites before it is brought into the work areas, ensuring that soil residuals and noxious weed seeds are removed and that egg deposits from pests are not present; the Contractor shall consult with the USDA jurisdictional office for additional cleaning requirements. The contact person will be Rob McChesney, Plant Protection Quarantine, (208)378-5797, 9134 West Blackeagle Drive, Boise, Idaho 83709-1572.





SLICKSPOT PEPPERGRASS AREA  
IDENTIFICATION  
MAP

01061-9

R0002

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## SECTION 01320

### PROJECT SCHEDULE

#### PART 1 GENERAL

##### 1.1 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01300 SUBMITTALS:

- Schedules

GA Preliminary project schedule, two (2) copies.

GA initial project schedule, two (2) copies  
Activity No. Sort  
Predecor/successor listing  
Cost Schedule  
Floppy Disk (SDEF Format)  
Activity Code Dictionary.

FIO Periodic schedules updates, monthly updates two (2) copies.  
Floppy Disks (SDEF Format)  
Narrative  
Activity No. Sort  
Cost Schedule

- Statements

GA Qualifications.  
Documentation showing qualifications of personnel preparing schedule reports.

##### 1.2 QUALIFICATIONS

The Contractor shall designate an authorized representative who shall be responsible for the preparation of all required project schedule reports. This person shall have previously created and reviewed computerized schedules. Qualifications of this individual shall be submitted to the Contracting Officer for review with the Preliminary Project Schedule submission.

#### PART 2 PRODUCTS (Not Applicable)

## PART 3 EXECUTION

### 3.1 GENERAL

Pursuant to the Contract Clause, SCHEDULE FOR CONSTRUCTION CONTRACTS a Project Schedule as described below shall be prepared. The scheduling of design and construction activities shall be the responsibility of the Contractor and shall be keyed to the Contractor's proposed design and construction schedule and shall be in accordance with the requirements of the contract. Contractor management personnel shall actively participate in its development. Subcontractors and suppliers working on the project should also contribute in developing and maintaining an accurate Project Schedule. The approved Project Schedule shall be used to measure the progress of the work, to aid in evaluating time extensions, and to provide the basis of all progress payments.

### 3.2 BASIS FOR PAYMENT

The schedule shall be the basis for measuring Contractor progress. Lack of an approved schedule or scheduling personnel shall result in an inability of the Contracting Officer to evaluate Contractor progress for the purposes of payment. Failure of the Contractor to provide all information, as specified below, shall result in the disapproval of the entire Project Schedule submission and the inability of the Contracting Officer to evaluate Contractor progress for payment purposes. In the case where Project Schedule revisions have been directed by the Contracting Officer and those revisions have not been included in the Project Schedule, then the Contracting Officer may hold retainage up to the maximum allowed by contract, each payment period, until revisions to the Project Schedule have been made.

### 3.3 PROJECT SCHEDULE

The computer software system utilized by the Contractor to produce the Project Schedule shall be capable of providing all requirements of this specification including the SDEF (Standard Data Exchange Format). Failure of the Contractor to meet the requirements of this specification shall result in the disapproval of the schedule. Manual methods used to produce any required information shall require approval by the Contracting Officer.

#### 3.3.1 Use of the Critical Path Method

The Critical Path Method (CPM) of network calculation shall be used to generate the Project Schedule. The Contractor shall provide the Project Schedule in Precedence Diagram Method (PDM)

### 3.3.2 Level of Detail Required

With the exception of the initial and preliminary schedule submission, the Project Schedule shall include an appropriate level of detail. Failure to develop or update the Project Schedule or provide data to the Contracting Officer at the appropriate level of detail, as specified by the Contracting Officer, shall result in the disapproval of the schedule. The Contracting Officer will use, but is not limited to, the following conditions to determine the appropriate level of detail to be used in the Project Schedule.

#### 3.3.2.1 Activity Durations

Contractor submissions shall be required to follow the direction of the Contracting Officer regarding reasonable activity durations. Reasonable durations are those that allow the progress of activities to be accurately determined between payment periods. A rule of thumb, that the Contractor should use, is that less than 2 percent of all non-procurement activities' Original Durations shall be greater than 20 days. Phase I "Design" activities shall follow the Design Submittal Schedule guide lines of Section 00810, paragraph 1.3 - Phase I Requirements, and the Contractor's proposed design schedule.

#### 3.3.2.2 Procurement Activities

Tasks related to the procurement of long lead materials or equipment shall be included as separate activities in the project schedule. Long lead materials and equipment are those materials that have a procurement cycle of over 90 days. Examples of procurement process activities include, but are not limited to: submittals, approvals, procurement, fabrication, delivery, installation, start-up, and testing.

#### 3.3.2.3 Government Activities

Government and other agencies activities that could impact progress shall be shown. These activities include, but are not limited to: *reviews*, approvals, inspections, utility tie-in, Government Furnished Equipment (GFE) and notice to proceed for phasing requirements.

#### 3.3.2.4 Responsibility

All activities shall be identified in the project schedule by the party responsible to perform the work. Responsibility includes, but is not limited to, the subcontracting firm, (at the lowest tier), contractor work force, or government agency performing a given task. Activities shall not belong to more than one responsible party. The responsible party for each activity shall be identified by the Responsibility Code.

### 3.3.2.5 Work Areas

All activities shall be identified in the project schedule by the work area in which the activity occurs. Activities shall not be allowed to cover more than one work area. The work area of each activity shall be identified by the Work Area Code.

### 3.3.2.6 Modification or Claim Number

Any activity that is added or changed by contract modification or used to justify claimed time shall be identified by a mod or claim code that changed the activity. Activities shall not belong to more than one modification or claim item. The modification or claim number of each activity shall be identified by the Mod or Claim Number.

### 3.3.2.7 Bid Item

All activities shall be identified in the project schedule by the Bid Item to which the activity belongs. An activity shall not contain work in more than one bid item. The bid item for each appropriate activity shall be identified by the Bid Item Code.

### 3.3.2.8 (Not used)

### 3.3.2.9 Category of Work

All Activities shall be identified in the project schedule according to the category of work which best describes the activity. Category of work refers, but is not limited to, to the procurement chain of activities including such items as submittals, approvals, procurement, fabrication, delivery, installation, start-up, and testing. The category of work for each activity shall be identified by the Category of Work Code.

### 3.3.2.10 Feature of Work

All activities shall be identified in the project schedule according to the feature of work to which the activity belongs. Feature of work refers, but is not limited to a work breakdown structure for the project. The feature of work for each activity shall be identified by the Feature of Work Code.

## 3.3.3 Scheduled Project Completion

The schedule interval shall extend from notice-to-proceed to the contract completion date.

#### 3.3.3.1 Project Start Date

The schedule shall start no earlier than the date that the Notice to Proceed (NTP) was acknowledged. The Contractor shall include as the first activity in the project schedule an activity called "Start Project". The "Start Project" activity shall have: a "ES" constraint, a constraint date equal to the date that the NTP was acknowledged, and a zero day duration.

#### 3.3.3.2 Constraint of Last Activity

Completion of the last activity in the schedule shall be constrained by the contract completion date. Calculation on project updates shall be such that if the early finish of the last activity falls after the contract completion date, then the float calculation shall reflect a negative float on the critical path. The Contractor shall include as the last activity in the project schedule an activity call "End Project". The "End Project" activity shall have: a "LF" constraint, a constraint date equal to the completion date for the project, and a zero day duration.

#### 3.3.3.3 Early Project Completion

In the event the project schedule shows completion, the project prior to the contract completion date, the Contractor shall identify those activities that have been accelerated and/or those activities that are scheduled in parallel to support the Contractor's "early" completion. Contractor shall specifically address each of the activities noted at every project schedule update period to assist the Contracting Officer to evaluate the Contractor's ability to actually complete prior to the contract period.

#### 3.3.4 Interim Completion Dates

Contractually specified interim completion dates shall also be constrained to show negative float if the early finish date of the last activity in that phase falls after the interim completion date.

#### 3.3.5 Default Progress Data Disallowed

Actual Start and Finish dates shall not be automatically updated by default mechanisms that may be included in CPM scheduling software systems. Actual Start and Finish dates on the CPM schedule shall match those dates provided from Contractor Quality Control Reports. Failure of the Contractor to document the Actual Start and Finish dates on the Daily Quality Control report for every in progress or completed activity and insure that the data contained on the Daily Quality Control reports is the sole basis for schedule updating shall result in the disapproval of the Contractor's schedule and the inability of the Contracting Officer to evaluate Contractor progress for payment purposes.

### 3.3.6 Out-of-Sequence Progress

Activities that have posted progress without predecessors being completed (Out-of-Sequence Progress) shall be allowed only by the case-by-case approval of the Contracting Officer. The Contracting Officer may direct that changes in schedule logic be made to correct any or all out-of-sequence work.

### 3.3.7 Negative Lags

Lag durations contained in the project schedule shall not have a negative value.

## 3.4 PROJECT SCHEDULE SUBMISSIONS

The Contractor shall provide the submissions as described below. The data disk, reports, and network diagrams required for each submission are contained in paragraph SUBMISSION REQUIREMENTS.

### 3.4.1 Preliminary Project Schedule Submission

The Preliminary Project Schedule, defining the Contractor's planned operations for the first 60 calendar days shall be submitted for approval within 10 calendar days after Notice to Proceed is acknowledged. The approved preliminary schedule shall be used for payment purposes not to exceed 60 calendar days after Notice to Proceed.

### 3.4.2 Initial Project Schedule Submission

The Initial Project Schedule shall be submitted for approval within 40 calendar days after Notice to Proceed. The schedule shall provide a reasonable sequence of activities which represent work through the entire project and shall be at a reasonable level of detail.

### 3.4.3 Periodic Schedule Updates

Based on the result of progress meetings, specified in "Periodic Progress Meetings," the Contractor shall submit periodic schedule updates. These submissions shall enable the Contracting Officer or to assess Contractor's progress. If the Contractor fails or refuses to furnish the information and project schedule data, which in the judgment of the Contracting Officer or authorized representative, is necessary for verifying the contractor's progress, the Contractor shall be deemed not to have provided an estimate upon which progress payment may be made.



### 3.4.4 Standard Activity Coding Dictionary

The Contractor shall submit, with the Initial Project Schedule, a coding scheme that shall be used throughout the project for all activity codes contained in the schedule. The coding scheme submitted shall list the values for each activity code category and translate those values into project specific designations. For example, a Responsibility Code Value, "ELE", may be identified as "Electrical Subcontractor." Activity code values shall represent the same information throughout the duration of the contract. Once approved with the Initial Project Schedule submission, changes to the activity coding scheme must be approved by the Contracting Officer.

### 3.5 SUBMISSION REQUIREMENTS

The as noted in paragraph 1.1 items shall be submitted by the Contractor for the initial submission, and every periodic project schedule update throughout the life of the project:

#### 3.5.1 Data Disks

Two data disks containing the project schedule shall be provided. Data on the disks shall be in the format specified in paragraph 3.10 NAS DATA.

##### 3.5.1.1 File Medium

Required data shall be submitted on 3.5 disks, formatted to hold 1.44 MB of data, under the MS-DOS Version 5.0 operating system.

##### 3.5.1.2 Disk Label

A permanent exterior label shall be affixed to each disk submitted. The label shall indicate the type of schedule (Initial, Update, or Change), full contract number, project name, project location, data date, name and telephone number or person responsible for the schedule, and the MS-DOS version used to format the disk.

##### 3.5.1.3 File Name

Each file submitted shall have a name related to either the schedule data date, project name, or contract number. The Contractor shall develop a naming convention that will insure that the names of the files submitted are unique. the Contractor shall submit the file naming convention to the Contracting Officer for approval.

### 3.5.2 Narrative Report

A Narrative Report shall be provided with each update of the project schedule. This report shall be provided as the basis of the Contractor's progress payment request. The Narrative Report shall include: a description of activities along the critical path, a description of current and anticipated problem areas or delaying factors and their impact, and an explanation of corrective actions taken.

### 3.5.3 Approved Changes Verification

Only project schedule changes that have been previously approved by the Contracting Officer shall be included in the schedule submission. The Narrative Report shall specifically reference, on an activity by activity basis, all changes made since the previous period and relate each change to documented, approved schedule changes.

### 3.5.4 Schedule Reports

The format for each activity for the schedule reports listed below shall contain: Activity Numbers, Activity Description, Original Duration, Remaining Duration, Early Start Date, Early Finish Date, Late Start Date, Late Finish Date, Total Float. Actual Start and Actual Finish Dates shall be printed for those activities in-progress or completed.

#### 3.5.4.1 Activity Report

A list of all activities sorted according to activity number. For completed activities the Actual Start Date shall be used as the secondary sort.

#### 3.5.4.2 Logic Report

A list of Preceding and Succeeding activities for every activity in ascending order by activity number and then sorted according to Early Start Date. For completed activities the Actual Start Date shall be used as the secondary sort.

#### 3.5.4.3 Total Float Report

A list of all activities sorted in ascending order of total float. Activities which have the same amount of total float shall be listed in ascending order of Early Start Dates.

#### 3.5.4.4 Earnings Report

A compilation of the Contractor's Total Earnings on the project from the Notice to Proceed until the most recent Monthly Progress Meeting. This report shall reflect the Earnings of specific activities based on the agreements made in the field and approved between the Contractor and Contracting Officer at the most recent Monthly Progress Meeting. Provided that the Contractor has provided a complete schedule

update, this report shall serve as the basis of determining Contractor Payment. Activities shall be grouped by bid item and sorted by activity numbers. This report shall: sum all activities in a bid item and provide a bid item percent complete and sum all bid items to provide a total project percent complete. The printed report shall contain, for each activity: Activity Number, Activity Description, Original Budgeted Amount, Total Quantity, Quantity to Date, Percent Complete (based on cost), Earnings to Date.

### 3.5.5 Network Diagram

The network diagram shall be required on the initial schedule submission and on quarterly update submissions. The network diagram shall depict and display the order and interdependence of activities and the sequence in which the work is to be accomplished. The Contracting Officer will use, but is not limited to, the following conditions to review compliance with this paragraph:

#### 3.5.5.1 Continuous Flow

Diagrams shall show a continuous flow from left to right with no arrows from right to left. The activity or event number, description, duration, and estimated earned value shall be shown on the diagram.

#### 3.5.5.2 Project Milestone Dates

Dates shall be shown on the diagram for start of project, any contract required interim completion dates, and contract completion dates.

#### 3.5.5.3 Critical Path

The critical path shall be clearly shown.

#### 3.5.5.4 Banding

Activities shall be grouped to assist in the understanding of the activity sequence. Typically, this flow will group activities by category of work, work area and/or responsibility.

#### 3.5.5.5 S-Curves

Earnings curves showing projected early and late earnings and earnings to date.

### 3.6 PERIODIC PROGRESS MEETINGS

Progress meetings to discuss payment shall include a monthly on-site meeting or other regular intervals mutually agreed to at the preconstruction conference. During this meeting the Contractor will describe, on an activity by activity basis, all proposed revisions and adjustments to the project schedule required to reflect the current status of the project. The Contracting Officer will approve activity progress, proposed revisions, and adjustments as appropriate.

#### 3.6.1 Meeting Attendance

The Contractor's Project Manager and Scheduler shall attend the regular progress meeting.

#### 3.6.2 Update Submission Following Progress Meeting

A complete update of the project schedule containing all approved progress, revisions, and adjustments, based on the regular progress meeting, shall be submitted not later than 4 working days after the monthly progress meeting.

#### 3.6.3 Progress Meeting Contents

Update information, including Actual Start Dates, Actual Finish Dates, Remaining Durations, and Cost to Date shall be subject to the approval of the Contracting Officer. The following minimum set of items which the Contractor shall address, on an activity by activity basis, during each progress meeting.

##### 3.6.3.1 Start and Finish Dates

The Actual Start and Actual Finish dates for each activity currently in-progress or completed activities.

##### 3.6.3.2 Time Completion

The estimated Remaining Duration for each activity in-progress. Time-based progress calculations must be based on Remaining Duration for each activity.

##### 3.6.3.3 Cost Completion

The earnings for each activity started. Payment shall be based on earnings for each in-progress or completed activity. Payment for individual activities shall not be made for work that contains quality defects. A portion of the overall project amount may be retained based on delays of activities.

##### 3.6.3.4 Logic Changes

All logic changes pertaining to Notice to Proceed on change orders, change orders to be incorporated into the schedule, contractor proposed changes in work sequence, corrections to schedule logic for out-of-sequence progress, lag durations, and other changes that have been made pursuant to contract provisions shall be specifically identified and discussed.

#### 3.6.3.5 Other Changes

Other changes required due to delays in completion of any activity or group of activities are those delays beyond the Contractors control such as strikes and unusual weather. Also included are delays encountered due to submittals, Government Activities, deliveries or work stoppage which makes re-planning the work necessary, and when the schedule does not represent the actual prosecution and progress of the work.

### 3.7 REQUESTS FOR TIME EXTENSIONS

In the event the Contractor requests an extension of the contract completion date, he shall furnish such justification, project schedule data and supporting evidence as the Contracting Officer may deem necessary for a determination as to whether or not the Contractor is entitled to an extension of time under the provisions of the contract. Submission of proof of delay, based on revised activity logic, duration, and costs (updated to the specific date that the delay occurred) is obligatory to any approvals.

#### 3.7.1 Justification of Delay

The project schedule must clearly display that the Contractor has used, in full, all the float time available for the work involved with this request. The Contracting Officer's determination as to the number of allowable days of contract extension, shall be based upon the project schedule updates in effect for the time period in question and other factual information. Actual delays that are found to be caused by the Contractor's own actions, which result in the extension of the schedule, shall not be a cause for a time extension to the contract completion date.

#### 3.7.2 Submission Requirements

The Contractor shall submit a justification for each request for a change in the contract completion date of under two weeks based upon the most recent schedule update at the time of the Notice to Proceed or constructive direction issued for the change. Such a request shall be in accordance with the requirements of other appropriate Contract Clauses and shall include, as a minimum:

- a. A list of affected activities, with their associated project schedule activity number.
- b. A brief explanation of the causes of the change.
- c. An analysis of the overall impact of the changes proposed.
- d. A sub-network of the affected area.

Activities impacted in each justification for change shall be identified by a unique activity code contained in the required data file.

### 3.7.3 Additional Submission Requirements

For any request for time extension for over 2 weeks, the Contracting Officer may request an interim update with revised activities for a specific change request. The Contractor shall provide this disk within 4 days of the Contracting Officer's request.

## 3.8 DIRECTED CHANGES

If Notice to Proceed (NTP) is issued for changes prior to settlement of price and/or time, the Contractor shall submit proposed schedule revisions to the Contracting Officer within 2 weeks of the NTP being issued. The proposed revisions to the schedule will be approved by the Contracting Officer prior to inclusion of those changes within the project schedule. If the Contractor fails to submit the proposed revisions, the Contracting Officer may furnish the Contractor suggested revisions to the project schedule. The Contractor shall include these revisions in the project schedule until the Contractor submits revisions, and final changes and impacts have been negotiated. If the Contractor has any objections to the revisions furnished by the Contracting Officer, then the Contractor shall advise the Contracting Officer within 2 weeks of receipt of the revisions. Regardless of the objections, the Contractor will continue to update their schedule with the Contracting Officer's revisions until a mutual agreement in the revisions may be made. If the Contractor fails to submit alternative revisions within 2 weeks of receipt of the Contracting Officer's proposed revisions, the Contractor will be deemed to have concurred with the Contracting Officer's proposed revisions. The proposed revisions will then be the basis for an equitable adjustment for performance of the work.

## 3.9 OWNERSHIP OF FLOAT

Float available in the schedule, at any time, shall not be considered for the exclusive use of either the Government or the Contractor.

### 3.10 NAS DATA

The Contractor shall provide the Government with the means to electronically transfer all required NAS data into its ADP equipment and schedule software, such that it can independently obtain and process the information. The Contractor may use network analysis software different from that used by the Contracting Officer in the Resident Office. Under this alternative, the Contractor shall furnish the following:

NAS data that complies with the Scheduling System Data Exchange Format (SDEF). This is a standard ASCII format for exchanging scheduling data and is compatible with our resident management system. Many software developers are using SDEF. The SDEF specifications are in a separate publication, from the Internet [www.cecer.army.mil/pl/sdef](http://www.cecer.army.mil/pl/sdef).

END OF SECTION

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## SECTION 01330

### SUBMITTAL PROCEDURES

#### PART 1 GENERAL

**INTRODUCTION** Design submittal activities shall follow the guide lines presented in Section 00810 Design-Build Contract Procedures. All correspondence shall follow the guidance of Section 01001 Supplementary Requirements, paragraph 1.3 Correspondence. The following guidance is to be followed for all construction related submittals, all submittals required in Division 1 specifications and all submittals identified in Section 00860 Statement of Work as requiring Contracting Officer approval.

#### 1.1 CONTROL AND SCHEDULING OF SUBMITTALS

##### 1.1.1 Submittal Coordination Meeting

After the preconstruction conference and before any submittals are sent to the Contracting Officer's Representative (COR), with the exception of Division 1 submittals, the Contractor shall meet with the COR to develop an approved preliminary submittal register, ENG Form 4288. During the meeting all required items will be identified and grouped into three categories:

- Government Approved (GA)

Government approval is required for extensions of design, critical materials, variations/deviations, an "or equal" decision, equipment whose compatibility with the entire system must be checked, architectural items such as Color Charts/Patterns/Textures, and other items as designated by the COR. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction," these submittals will be acted on as "shop drawings."

- For Information Only (FIO)

Submittals not requiring Government approval will be for information only. These are items such as Installation Procedures, Certificates of compliance, Samples, Qualifications, etc. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction," these submittals will not be acted on as "shop drawings."

- Those items that can be visually inspected by the Contractor's Quality Control Representative (CQC) on site or are provided to the Government other than with an ENG Form 4025: The items that fall into this category shall remain on the register but shall not be submitted to the COR. For these items, the "Classification" column on the submittal register shall remain blank.

##### 1.1.2 Final Submittal Register

The final submittal register shall be coordinated with the approved project schedule and submitted within 20 days of Notice to Proceed. In preparing the final document, adequate time

(minimum of 30 days) shall be allowed for review and approval, and possible resubmittal of each item on the register.

### 1.1.3 Submittal Register Updates

The Contractor's quality control representative shall review the listing at least every 30 days and take appropriate action to maintain an effective system. Copies of updated or corrected listings shall be submitted to the COR at least every 30 days in the quantity specified.

## 1.2 SUBMITTAL TYPES

Throughout these specifications submittals may be identified with the prefix "SD" (submittal data) followed by a number (category, i.e., data, drawings, reports, etc.). This is for bookkeeping and record sorting in the system:

### SD-01 Data

Submittals which provide calculations, descriptions, or documentation regarding the work.

### SD-04 Drawings

Submittals which graphically show relationship of various components of the work, schematic diagrams of systems, details of fabrication, layouts of particular elements, connections, and other relational aspects of the work.

### SD-06 Instructions

Preprinted material describing installation of a product, system or material, including special notices and material safety data sheets, if any, concerning impedances, hazards, and safety precautions.

### SD-07 Schedules

Tabular lists showing location, features, or other pertinent information regarding products, materials, equipment, or components to be used in the work.

### SD-08 Statements

A document, required of the Contractor, or through the Contractor from a subcontractor, supplier, installer, or manufacturer to confirm the quality or orderly progression of a portion of the work by documenting procedures, acceptability of methods or personnel, qualifications, or other quality verifications.

### SD-09 Reports

Reports of inspections or tests, including analyses and interpretation of test results. Each report shall be properly identified. Test methods used shall be identified and test results shall be recorded.

### SD-13 Certificates

Statement signed by an official authorized to certify on behalf of the manufacturer that a product, system or material meets specified requirements. The statement must be dated after the award of this contract and state the Contractor's name and address, project and location, and list specific requirements which are being certified.

#### SD-14 Samples

Fabricated and/or unfabricated physical examples of materials, products, and/or units of work as complete units or as portions of units.

#### SD-18 Records

Documentation to record compliance with technical or administrative requirements.

#### SD-19 Operation and Maintenance Manuals

Data which forms a part of an operation and maintenance manual.

Submittals required by the Contract Clauses and other non-technical parts of the contract are not necessarily included in this section. These type of submittals can be added to the register before or during the submittal coordination meeting.

### 1.3 APPROVED SUBMITTALS

The approval of submittals by the COR shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory. Approval will not relieve the Contractor of the responsibility for any error which may exist. The Contractor, under the CQC requirements of this contract, is responsible for the dimensions and design of adequate connections, details, and satisfactory construction of all work. After submittals have been approved by the COR, no resubmittal for the purpose of substituting materials or equipment will be given consideration.

### 1.4 DISAPPROVED SUBMITTALS

The Contractor shall make all corrections required by the COR and promptly furnish a corrected submittal in the format and number of copies specified for the initial submittal. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, written notice, as required under the Contract Clause entitled "Changes," shall be given to the COR.

### 1.5 PAYMENT

Separate payment will not be made for submittals, and all costs associated therein shall be included in the applicable unit prices or lump sum prices contained in the schedule. Payment will not be made for any material or equipment which does not comply with contract requirements.

## PART 2 PRODUCTS (Not Applicable)

## PART 3 EXECUTION

### 3.1 GENERAL

Prior to submittal, all items shall be checked and approved by the Contractor's CQC and each item of the submittal shall be stamped, signed, and dated. Each respective transmittal form (ENG Form 4025) shall be signed and dated by the CQC certifying that the accompanying submittal complies with the contract requirements. This procedure applies to all submittals. Submittals shall include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including, but not limited to, catalog cuts, diagrams; operating charts or curves; test reports; test cylinders; samples; O&M manuals including parts lists; certifications; warranties and other such required items. Units of weights and measures used on all submittals shall be the same as the contract drawings. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. GA submittals shall be scheduled and made prior to the acquisition of the material or equipment covered thereby. The COR may request submittals in addition to those listed when deemed necessary to adequately describe the work covered in the respective sections. The Contractor shall maintain a complete and up-to-date file of all submittals/items on site for use by both the Contractor and the Government.

### 3.2 SUBMITTAL REGISTER (ENG Form 4288)

In APPENDIX A at the end of this specification Section is a copy of the ENG Form 4288. The Contractor shall list each item of equipment and material for which submittals are required by the Special Clauses (SC's), Technical Specifications Division 1 and the Statement of Work - Section 00860. The Contractor shall approve all items listed on the submittal register. During the submittal coordination meeting, a preliminary submittal register will be created by annotating this Form 4288. When the final submittal register is submitted for approval, the Contractor shall complete the column entitled "Item No." and all data under "Contractor Schedule Dates" and return five completed copies to the COR for approval. The Contractor shall review the list to ensure its completeness and may expand general category listings to show individual entries for each item. The numbers in column "Item No." are to be assigned sequentially starting with "1" for each specification section. DO NOT preassign transmittal numbers when preparing the submittal register. When a conflict exists between the submittal register and a submittal requirement in the technical sections, other than those submittals referenced in Paragraph 3.9: Field Test Reports, the approved submittal register shall govern. The preliminary, and then the final approved submittal register, will become the scheduling documents and will be updated monthly and used to control submittals throughout the life of the contract. Names and titles of individuals authorized by the Contractor to approve shop drawings shall be submitted to COR with the final 4288 form. Supplier or subcontractors certifications are not acceptable as meeting this requirement.

### 3.3 SCHEDULING

Submittals covering component items forming a system, or items that are interrelated, shall be coordinated and submitted concurrently. Certifications shall be submitted together with other pertinent information and/or drawings. Additional processing time beyond 30 days, or number of copies, may be shown by the COR on the submittal register attached in the "Remarks" column, or may be added by the COR during the coordination meeting. No delays damages or

time extensions will be allowed for time lost due to the Contractor not properly scheduling and providing submittals.

### 3.4 TRANSMITTAL FORM (ENG Form 4025)

Transmittal Form 4025 (sample at the end of this section) shall be used for submitting both GA and FIO submittals in accordance with the instructions on the reverse side of the form. Transmittal numbers shall be assigned sequentially. Original 4025 forms shall be used (do not photo copy) and will be furnished by the COR upon request. These forms shall be filled in completely prior to submittal. Special care shall be exercised to ensure proper listing of the specification paragraph and/or sheet number of the contract drawings pertinent to the data submitted for each item.. Each submittal item shall be listed separately on the form, naming subcontractor, supplier, or manufacturer, applicable specification paragraph number(s), drawing/sheet number, pay item number, and any other information needed to identify the item, define its use, and locate it in the work. One or more 4025 forms may be used per specification section, however, DO NOT include more than one specification section per transmittal. Each submittal shall be complete, containing all information needed to determine contract compliance.

### 3.5 CROSS-REFERENCE (ENG FORM 4288/ENG FORM 4025)

To provide a cross-reference between the approved submittal register and transmittal forms, the Contractor shall record the "transmittal numbers" assigned when submitting items in column "Transmittal No." of the ENG FORM 4288. DO NOT preassign transmittal numbers when preparing the submittal register. Transmittal numbers shall be assigned sequentially in accordance with the instructions on the reverse side of the transmittal form (ENG FORM 4025). The item numbers in column "Item No." of submittal register shall correspond to the item numbers on ENG Form 4025.

### 3.6 SUBMITTAL PROCEDURE

#### 3.6.1 General

Shop drawings with ENG Form 4025 shall be submitted in the number of copies specified in subparagraphs "Government Approved Submittals" and "Information Only Submittals," or as indicated on the submittal register in the "Remarks" column. Submit a complete collated "reviewers copy" with one 4025 form and attachments (not originals). The remaining copies (4 for GA, 2 for FIO) of 4025 forms and attachments shall not be collated. This would not apply to a series of drawings.

#### 3.6.2 Approval of Submittals by the Contractor

Before submittal to the COR, the Contractor shall review and correct shop drawings prepared by subcontractors, suppliers, and itself, for completeness and compliance with plans and specifications. The Contractor shall not use red markings for correcting material to be submitted. Red markings are reserved for COR's use. Approval by the Contractor shall be indicated on each shop drawing by an approval stamp containing information as shown in this section. Submittals not conforming to the requirements of this section will be returned to the Contractor for correction and resubmittal.

### 3.6.3 Variations

For submittals which include proposed variations requested by the Contractor, column "h" of ENG Form 4025 shall be checked and the submittal shall be classified as GA, and submitted accordingly. The Contractor shall set forth in writing the justification for any variations and annotate such variations on the transmittal form in the REMARKS block. Variations are not approved unless there is an advantage to the Government. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted variations.

### 3.6.4 Drawings

Each drawing shall be not larger than A1 size (841 mm wide by 594 mm high), with a title block in lower right hand corner and a 75 mm by 100 mm clear area adjacent. The title block shall contain the subcontractor's or fabricator's name, contract number, description of item(s), bid item number, and a revision block. Provide a blank margin of 20 mm at bottom, 50 mm at left, and 10 mm at top and right. Where drawings are submitted for assemblies of more than one piece of equipment or systems of components dependent on each other for compatible characteristics, complete information shall be submitted on all such related components at the same time. The Contractor shall ensure that information is complete and that sequence of drawing submittal is such that all information is available for reviewing each drawing. Drawings for all items and equipment, of special manufacture or fabrication, shall consist of complete assembly and detail drawings. All revisions after initial submittal shall be shown by number, date, and subject in revision block.

#### 3.6.4.1 Submittals Containing Drawings Larger than A3 size, (297 mm high by 420 mm wide)

For GA submittals containing drawings larger than A3 size, one reproducible and one blue line copy will be required to be submitted with five copies of the ENG Form 4025. The marked-up reproducible (and/or any review comments contained on the page-size comment sheet(s) at the Government's option) will be returned to the Contractor upon review. Three copies of blue line drawings (generated from the reviewed reproducible) will be provided to the Government within 10 days of Contractor's receipt of the reviewed reproducible. The Contractor shall not incorporate approved work into the project until the Government has received the three blue line copies. The Contractor shall use the marked-up reproducible to make any additional copies as needed. For FIO submittals, one reproducible and two blue line copies will be required to be submitted with the appropriate number of copies of ENG Form 4025.

### 3.6.5 Printed Material

All requirements for shop drawings shall apply to catalog cuts, illustrations, printed specifications, or other data submitted, except that the 75 mm by 100 mm clear area adjacent to the title block is not mandatory. Inapplicable portions shall be marked out and applicable items such as model numbers, sizes, and accessories shall be indicated by arrow or highlighted.

### 3.7 SAMPLES REQUIRING LABORATORY ANALYSIS

See Section 01400 CONTRACTOR QUALITY CONTROL for procedures and address for samples requiring Government testing.

### 3.8 SAMPLES REQUIRING VISUAL INSPECTION

Samples requiring only physical inspection for appearance and suitability shall be coordinated with the on-site Government quality assurance representative (QAR).

### 3.9 FIELD TEST REPORTS

Routine tests such as soil density, concrete deliveries, repetitive pressure testing shall be delivered to the QAR with the daily Quality Control reports. See SECTION: 01400 CONTRACTOR QUALITY CONTROL.

### 3.10 CONTROL OF SUBMITTALS

The Contractor shall carefully control his procurement operations to ensure that each individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Register."

### 3.11 GOVERNMENT APPROVED SUBMITTALS (GA)

The Contractor shall submit 5 copies of GA submittals with 5 corresponding 4025 forms. Upon completion of GA submittal review, copies as specified below will be marked with an action code, dated, and returned to the Contractor. See "Drawings" above for special instructions if drawings larger than size A3 (297 mm by 420 mm) are used.

#### 3.11.1 Processing of GA Submittals

Submittals will be reviewed and processed as follows:

- a. Approved as Submitted (Action Code "A"): Shop drawings which can be approved without correction will be stamped "Approved" and two copies will be returned to the Contractor. No resubmittal required.
- b. Approved Except as Noted (Action Code "B"): Shop drawings which have only minor discrepancies will be annotated in red to indicate necessary corrections. Marked material will be stamped "Approved Except as Noted" and two copies returned to the Contractor for correction. No resubmittal required.
- c. Approved Except as Noted (Action Code "C"): Shop drawings which are incomplete or require more than minor corrections will be annotated in red to indicate necessary corrections. Marked material will be stamped "Approved Except as Noted - Resubmission Required" and two copies returned to the Contractor for correction. Resubmittal of only those items needing correction required.
- d. Disapproved (Action Code "E"): Shop drawings which are fundamentally in error, cover wrong equipment or construction, or require extensive corrections, will be returned to the

Contractor stamped "Disapproved." An explanation will be furnished on the submitted material or on ENG Form 4025 indicating reason for disapproval. Complete resubmittal required.

e. Resubmittal will not be required for shop drawings stamped "A" or "B" unless subsequent changes are made by Contractor or a contract modification. For shop drawings stamped "C" or "E," Contractor shall make corrections required, note any changes by dating the revisions to correspond with the change request date, and promptly resubmit the corrected material. Resubmittals shall be associated with the "parent" by use of sequential alpha characters (for example, resubmittal of transmittal 8 will be 8A, 8B, etc). Government costs incurred after the first resubmittal may be charged to the Contractor.

### 3.12 INFORMATION ONLY SUBMITTALS (FIO)

The Contractor shall submit three copies of data and four copies of ENG Form 4025. FIO submittals will not be returned. Government approval is not required on FIO submittals. These submittals will be used for information purposes. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the Contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications and will not prevent the COR from requiring removal and replacement if nonconforming material is incorporated in the work. This does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or check testing by the Government in those instances where the technical specifications so prescribe.

#### 3.12.1 Processing of FIO Submittals

FIO submittals shall be submitted prior to delivery of the material or equipment to the job site. ENG Form 4025 shall be marked with the words "Contractor approved - information copy only" in the REMARKS block of the form. Submittals will be monitored and spot checks made. When such checks indicate noncompliance, the Contractor will be notified by the same method used for GA submittals. Resubmittal of nonconforming FIO submittals shall be reclassified GA and shall be in five copies.

### 3.13 CONTRACTOR APPROVAL STAMP

The stamp used by the Contractor on the submittal data to certify that the submittal meets contract requirements shall be similar to the following:



CONTRACTOR:	
_____	
CONTRACT NO:	_____
TRANSMITTAL NO	_____
ITEM N NO	_____
SPECIFICATION SECTION	_____
PARAGRAPH NO	_____
APPROVED AS SUBMITTED	_____
APPROVED WITH CORRECTIONS AS	NOTED
ON SUBMITTAL DATA	_____
ON ATTACHED COMMENT SHEET	_____
SIGNATURE	
_____	
TITLE	
_____	
DATE	
_____	
_____	

CONTRACTORS REVIEW STAMP

MAXIMUM SIZE 75 MM BY 75 MM



INSTRUCTIONS

DACA67-00-R-0001

1. Section I will be initiated by the Contractor in the required number of copies.
2. Each transmittal shall be numbered consecutively in the space provided for "Transmittal No.". This number, in addition to the contract number, will form a serial number for identifying each submittal. For new submittals or resubmittals mark the appropriate box; on resubmittals, insert transmittal number of last submission as well as the new submittal number.
3. The "Item No." will be the same "Item No." as indicated on ENG FORM 4288-R for each entry on this form.
4. Submittals requiring expeditious handling will be submitted on a separate form.
5. Separate transmittal form will be used for submittals under separate sections of the specifications.
6. A check shall be placed in the "Variation" column when a submittal is not in accordance with the plans and specifications--also, a written statement to that effect shall be included in the space provided for "Remarks".
7. Form is self-transmittal, letter of transmittal is not required.
8. When a sample of material or Manufacturer's Certificate of Compliance is transmitted, indicate "Sample" or "Certificate" in column c, Section I.
9. U.S. Army Corps of Engineers approving authority will assign action codes as indicated below in space provided in Section I, column i to each item submitted. In addition they will ensure enclosures are indicated and attached to the form prior to return to the contractor. The Contractor will assign action codes as indicated below in Section I, column g, to each item submitted.

THE FOLLOWING ACTION CODES ARE GIVEN TO ITEMS SUBMITTED

A --	Approved as submitted.	E --	Disapproved (See attached).
B --	Approved, except as noted on drawings.	F --	Receipt acknowledged.
C --	Approved, except as noted on drawings. Refer to attached sheet resubmission required.	FX --	Receipt acknowledged, does not comply as noted with contract requirements.
D --	Will be returned by separate correspondence.	G --	Other (Specify)

10. Approval of items does not relieve the contractor from complying with all the requirements of the contract plans and specifications.

(Reverse of ENG Form 4025-R)

## APPENDIX A

### SUBMITTAL REGISTER

(ENG FORM 4288)

## SECTION 01415

### METRIC MEASUREMENTS

#### 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

##### AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM E 380 (1993) Practice for Use of the International System of Units (SI)

ASTM E 621 (1994) Practice for Use of Metric (SI) Units in Building Design and Construction

#### 1.2 GENERAL

This project includes metric units of measurements. The metric units used are the International System of Units (SI) developed and maintained by the General Conference on Weights and Measures (CGPM); the name International System of Units and the international abbreviation SI were adopted by the 11th CGPM in 1960. A number of circumstances require that both metric SI units and English inch-pound (I-P) units be included in a section of the specifications. When both metric and I-P measurements are included, the section may contain measurements for products that are manufactured to I-P dimensions and then expressed in mathematically converted metric value (soft metric) or, it may contain measurements for products that are manufactured to an industry recognized rounded metric (hard metric) dimensions but are allowed to be substituted by I-P products to comply with the law. Dual measurements are also included to indicate industry and/or Government standards, test values or other controlling factors, such as the code requirements where I-P values are needed for clarity or to trace back to the referenced standards, test values or codes. For American Society for Testing and Materials (ASTM) references in the technical specifications, the Contractor shall use the metric publication, if one is available (For example: ASTM A 36, use ASTM A 36M). An acceptable substitute to hard Metric SI Concrete Masonry Units (CMU) and Recessed Lighting Fixtures (RLF) is English in-pound (soft metric) CMU and RLF. The Contractor shall be responsible for any adjustments required to accommodate these alternative English in-pound units at no additional cost to the Government.

#### 1.3 USE OF MEASUREMENTS

Measurements shall be either in SI or I-P units as indicated, except for soft metric measurements or as otherwise authorized. The Contractor shall be responsible for all associated labor and materials when authorized to substitute one system of units for another and for the final assembly and performance of the specified work and/or products.

##### 1.3.1 Hard Metric

A hard metric measurement is indicated by an SI value with no expressed correlation to an I-P value, i.e., where an SI value is not an exact mathematical conversion of an I-P value, such as the use of 100 mm in lieu of 4 inches. Hard metric products are required when only metric

dimensions are indicated, except for Contractor's options as outlined in paragraph GENERAL above. Hard metric measurements are often used for field data such as distance from one point to another or distance above the floor. Products are considered to be hard metric when they are manufactured to metric dimensions or have an industry recognized metric designation.

### 1.3.2 Soft Metric

a. A soft metric measurement is indicated by an SI value which is a mathematical conversion of the I-P value shown in parentheses e.g. 38.1 mm (1-1/2 inches). Soft metric measurements are used for measurements pertaining to products, test values, and other situations where the I-P units are the standard for manufacture, verification, or other controlling factor. The I-P value shall govern while the metric measurement is provided for information.

b. A soft metric measurement is also indicated for products that are manufactured in industry designated metric dimensions but are required by law to allow substitute I-P products. These measurements are indicated by a manufacturing hard metric product dimension followed by the substitute I-P equivalent value in parentheses e.g., 190 x 190 x 390 mm (7-5/8 x 7-5/8 x 15-5/8 inches).

### 1.3.3 Neutral

A neutral measurement is indicated by an identifier which has no expressed relation to either an SI or an I-P value (e.g., American Wire Gage (AWG) which indicates thickness but in itself is neither SI nor I-P).

## 1.4 COORDINATION

Discrepancies, such as mismatches or product unavailability, arising from use of both metric and non-metric measurements and discrepancies between the measurements in the specifications and the measurements in the drawings shall be brought to the attention of the Contracting Officer for resolution.

## 1.5 RELATIONSHIP TO SUBMITTALS

Submittals for Government approval or for information only shall cover the SI or I-P products actually being furnished for the project. The Contractor shall submit the required drawings and calculations in the same units used in the contract documents describing the product or requirement unless otherwise instructed or approved. The Contractor shall use ASTM E 380 and ASTM E 621 as the basis for establishing metric measurements required to be used in submittals.

END OF SECTION

## SECTION 01451

### CONTRACTOR QUALITY CONTROL

#### PART 1 GENERAL

##### 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

##### AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 3740	(1994) Evaluation of Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
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ASTM E 329	(1993) Use in the Evaluation of Testing and Inspection Agencies as Used in Construction
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##### 1.2 PAYMENT

Separate payment will not be made for providing and maintaining an effective Quality Control program, and all costs associated therewith shall be included in the applicable unit prices or lump-sum prices contained in the Bidding Schedule.

#### PART 2 PRODUCTS (Not Applicable)

#### PART 3 EXECUTION

##### 3.1 GENERAL

The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Clause entitled "Inspection of Construction", in SECTION 00700 of this document.

The quality control system shall consist of plans, procedures, and organization necessary to produce an end product which complies with the contract requirements. The system shall cover all construction operations, both on-site and off-site, and shall be keyed to the proposed design and construction sequence.

##### 3.2 QUALITY CONTROL PLAN

###### 3.2.1 General

The Contractor shall furnish for review by the Government, not later than 30 days after receipt of notice to proceed, the Contractor Quality Control (CQC) Plan proposed to implement the requirements of the Contract Clause entitled "Inspection of Construction." The plan shall identify personnel, procedures, control, instructions, test, records, and forms to be used. The

Government will consider an interim plan for the first 30 days of operation. Construction will be permitted to begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of work to be started. Work outside of the features of work included in an accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional features of work to be started.

### 3.2.2 Content of the CQC Plan

The CQC plan shall include, as a minimum, the following to cover all construction operations, both on-site and off-site, including work by subcontractors, fabricators, suppliers and purchasing agents:

- a. A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff shall implement the three phase control system for all aspects of the work specified. The staff shall include a CQC system manager who shall report to the project manager or someone higher in the Contractor's organization. Project manager in this context shall mean the individual with responsibility for the overall management of the project including quality and production.
- b. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a QC function.
- c. A copy of the letter to the CQC System Manager signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC System Manager including authority to stop work which is not in compliance with the contract. The CQC System Manager shall issue letters of direction to all other various quality control representatives outlining duties, authorities and responsibilities. Copies of these letters will also be furnished to the Government.
- d. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, off-site fabricators, suppliers and purchasing agents. These procedures shall be in accordance with Section 01330 SUBMITTAL PROCEDURES.
- e. Control, verification and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test. (Laboratory facilities will be approved by the Contracting Officer.)
- f. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.
- g. Procedures for tracking construction deficiencies from identification through acceptable corrective action. These procedures will establish verification that identified deficiencies have been corrected.
- h. Reporting procedures, including proposed reporting formats. This shall include a copy of the Daily CQC report form.
- i. A list of the definable features of work. A definable feature of work is a task which is separate and distinct from other tasks and has separate control requirements. It could be



identified by different trades or disciplines, or it could be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable feature under a particular section. This list will be agreed upon during the coordination meeting.

j. Procedures for assuring that Contractor is complying with the environmental protection requirements of Section 01061, including method for assuring Contractor's personnel shall confine all activities to areas defined by the drawings and specifications and shall remain within the rights of way and lands identified by the sketches attached to ~~Section 00800, SPECIAL CLAUSES~~ APPENDIX D, SITE LEGAL DESCRIPTION.

### 3.2.3 Acceptance of Plan

Acceptance of the Contractor's plan is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction. The Government reserves the right to require the Contractor to make changes in his CQC plan and operations including removal of personnel, as necessary, to obtain the quality specified.

### 3.2.4 Notification of Changes

After acceptance of the QC plan, the Contractor shall notify the Contracting Officer in writing a minimum of seven calendar days prior to any proposed change. Proposed changes are subject to acceptance by the Contracting Officer.

## 3.3 COORDINATION MEETING

After the Predesign Meeting, before start of construction, and prior to acceptance by the Government of the Quality Control Plan, the Contractor shall meet with the Contracting Officer or Authorized Representative and discuss the Contractor's quality control system. During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, control activities, testing, administration of the system for both on-site and off-site work, and the interrelationship of Contractor's Management and control with the Government's Quality Assurance. Minutes of the meeting shall be prepared by the Government and signed by both the Contractor and the Contracting Officer. The minutes shall become a part of the contract file. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures which may require corrective action by the Contractor.

## 3.4 QUALITY CONTROL ORGANIZATION

### 3.4.1 Design: Architect of Record

Design quality assurance shall be the responsibility of the Architect who will seal all drawings and specifications as the "Architect of Record." He shall also be the final approval authority for shop drawings and any other tests and submittals effecting the final design. The design quality management system shall require professional engineering designers other than the designer to review and approve (seal) all engineering calculations and designs unless otherwise approved by the Contracting Officer.

### 3.4.2 Construction: CQC System Manager

The Contractor shall identify an individual within his organization at the site of the work who shall be responsible for overall management of CQC and have the authority to act in all CQC matters for the Contractor. This CQC System Manager shall be on the site at all times during construction and will be employed by the Contractor, except as noted in the following. An alternate for the CQC System Manager will be identified in the plan to serve in the event of the system manager's absence. Period of absence may not exceed 2 weeks at any one time. The requirements for the alternate will be the same as for the designated CQC manager.

### 3.4.3 CQC Organizational Staffing

The Contractor shall provide a CQC staff which shall be at the site of work at all times during progress, with complete authority to take any action necessary to ensure compliance with the contract.

#### 3.4.3.1 CQC Staff

Following are the minimum requirements for the CQC staff. These minimum requirements will not necessarily assure an adequate staff to meet the CQC requirements at all times during construction. The actual strength of the CQC staff may vary during any specific work period to cover the needs of the work period. When necessary for a proper CQC organization, the Contractor will add additional staff at no cost to the Government. This listing of minimum staff in no way relieves the Contractor of meeting the basic requirements of quality construction in accordance with contract requirements. All CQC staff members shall be subject to acceptance by the Contracting Officer.

#### 3.4.3.2 CQC System Manager

The CQC system manager shall be an experienced construction person with a minimum of two years experience in related work. The CQC system manager shall be assigned no other duties.

In addition to the above experience and education requirements the CQC System Manager shall have completed the course entitled "Construction Quality Management for Contractors" prior to start of field work. This one day course is periodically offered in Spokane, Boise, Portland, and Seattle. For further information contact the Construction Division Office in your area.

#### 3.4.3.3 Supplemental Personnel

A staff shall be maintained under the direction of the CQC system manager to perform all QC activities. The staff must be of sufficient size to ensure adequate QC coverage of all work phases, work shifts, and work crews involved in the construction. These personnel may perform other duties, but must be fully qualified by experience and technical training to perform their assigned QC responsibilities and must be allowed sufficient time to carry out these responsibilities. The QC plan will clearly state the duties and responsibilities of each staff member.

### 3.4.4 Organizational Changes

The Contractor shall obtain Contracting Officer's acceptance before replacing any member of the CQC staff. Requests shall include the names, qualifications, duties, and responsibilities of each proposed replacement.

### 3.5 SUBMITTALS

Submittals shall be as specified in Section 01330 SUBMITTAL PROCEDURES. The CQC organization shall be responsible for certifying that all submittals are in compliance with the contract requirements. The Government will furnish copies of test report forms (See Table 2) upon request by the Contractor. The Contractor may use other forms as approved.

### 3.6 CONTROL

Contractor Quality Control is the means by which the Contractor ensures that the construction, to include that of subcontractors and suppliers, complies with the requirements of the contract. The controls shall be adequate to cover all construction operations, including both on-site and off-site fabrication, and will be keyed to the proposed construction sequence. The controls shall include at least three phases of control to be conducted by the CQC system manager for all definable features of work, as follows:

#### 3.6.1 Preparatory Phase

This phase shall be performed prior to beginning work on each definable feature of work and shall include:

- a. A review of each paragraph of applicable specifications.
- b. A review of the contract plans.
- c. A check to assure that all materials and/or equipment have been tested, submitted, and approved.
- d. A check to assure that provisions have been made to provide required control inspection and testing.
- e. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.
- f. A physical examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawing or submitted data, and are properly stored.
- g. A review of the appropriate activity hazard analysis to assure safety requirements are met.
- h. Discussion of procedures for constructing the work including repetitive deficiencies. Document construction tolerances and workmanship standards for that phase of work.
- i. A check to ensure that the portion of the plan for the work to be performed has been accepted by the Contracting Officer.

j. The Government shall be notified at least 48 hours in advance of beginning any of the required action of the preparatory phase. This phase shall include a meeting conducted by the CQC system manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The results of the preparatory phase actions shall be documented by separate minutes prepared by the CQC system manager and attached to the daily QC report. The Contractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

### 3.6.2 Initial Phase

This phase shall be accomplished at the beginning of a definable feature of work. The following shall be accomplished:

- a. A check of preliminary work to ensure that it is in compliance with contract requirements. Review minutes of the preparatory meeting.
- b. Verification of full contract compliance. Verify required control inspection and testing.
- c. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with sample panels is appropriate.
- d. Resolve all differences.
- e. Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.
- f. The Government shall be notified at least 48 hours in advance of beginning the initial phase. Separate minutes of this phase shall be prepared by the CQC system manager and attached to the daily QC report. Exact location of initial phase shall be indicated for future reference and comparison with follow-up phases.
- g. The initial phase should be repeated for each new crew to work on-site, or any time acceptable specified quality standards are not being met.

### 3.6.3 Follow-up Phase

Daily checks shall be performed to assure continuing compliance with contract requirements, including control testing, until completion of the particular feature of work. The checks shall be made a matter of record in the CQC documentation and shall document specific results of inspections for all features of work for the day or shift. Final follow-up checks shall be conducted and all deficiencies corrected prior to the start of additional features of work which may be affected by the deficient work. The Contractor shall not build upon or conceal non-conforming work.

### 3.6.4 Additional Preparatory and Initial Phases

Additional preparatory and initial phases may be conducted on the same definable features of work as determined by the Government if the quality of on-going work is unacceptable; or if there are changes in the applicable QC staff or in the on-site production supervision or work crew; or if work on a definable feature is resumed after a substantial period of inactivity, or if other problems develop.

## 3.7 TESTS

### 3.7.1 Testing Procedure

The Contractor shall perform tests specified or required to verify that control measures are adequate to provide a product which conforms to contract requirements, see Table 1-Minimum Testing. Testing includes operation and/or acceptance tests when specified. The Contractor shall procure the services of a Corps of Engineers approved testing laboratory. Approval of testing laboratories shall be by the Corps of Engineers Materials Testing Center, Waterways Experiment Station, 3909 Hall Ferry Road, Vicksburg, MS 39180-6199. A list of tests to be performed shall be furnished as a part of the CQC plan. The list shall give the test name, frequency, specification paragraph containing the test requirements, the personnel and laboratory responsible for each type of test, and an estimate of the number of tests required. The Contractor shall perform the following activities and record and provide the following data:

- a. Verify that testing procedures comply with contract requirements.
- b. Verify that facilities and testing equipment are available and comply with testing standards.
- c. Check test instrument calibration data against certified standards.
- d. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.
- e. Results of all tests taken, both passing and failing tests, will be recorded on the Quality Control report for the date taken. Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test will be given. Actual test reports may be submitted later, if approved by the Contracting Officer, with a reference to the test number and date taken. An information copy of tests performed by an off-site or commercial test facility will be provided directly to the Contracting Officer. Failure to submit timely test reports, as stated, may result in nonpayment for related work performed and disapproval of the test facility for this contract. Test results shall be signed by an Engineer Registered in the state where the tests are performed.

### 3.7.2 Testing Laboratories

#### 3.7.2.1 Capability Check

The Government reserves the right to check laboratory equipment in the proposed laboratory for compliance with the standards set forth in the contract specifications and to check the laboratory technician's testing procedures and techniques. Costs of testing the Contractor Laboratory facilities for Government acceptance shall be borne by the Contractor. Laboratory facilities, including personnel and equipment, utilized for testing soils, concrete, asphalt and steel shall meet criteria detailed in ASTM D 3740 and ASTM E 329, and be accredited by the American Association of Laboratory Accreditation (AALA), National Institute of Standards and Technology (NIST), National Voluntary Laboratory Accreditation Program (NVLAP), the American Association of State Highway and Transportation Officials (AASHTO), or other approved national accreditation authority. All personnel performing concrete testing shall be certified by the American Concrete Institute (ACI). The contractor shall submit documentation showing the AALA, or other approved testing facility, certification, personnel ACI certifications, and the name and work experience of the Registered Professional Engineer on the staff.

#### 3.7.2.2 Capability Recheck

If the selected laboratory fails the capability check, the Contractor will be assessed a charge of \$500.00 plus travel costs to reimburse the Government for each succeeding recheck of the laboratory or the checking of a subsequently selected laboratory. Such costs will be deducted from the contract amount due the Contractor.

### 3.7.3 On-Site Laboratory

The Government reserves the right to utilize the Contractor's control testing laboratory and equipment to make assurance tests and to check the Contractor's testing procedures, techniques, and test results at no additional cost to the Government.

### 3.7.4 Furnishing or Transportation of Samples for Testing

Costs incidental to the transportation of samples or materials will be borne by the Contractor. Samples of materials for test verification and acceptance testing by the Government shall be delivered to the Corps of Engineers Division Laboratory, f.o.b., at the following address:

U.S. Army Corps of Engineers  
Materials Testing Center  
Waterways Experiment Station  
3909 Hall Ferry Road  
Vicksburg, MS 39180-6199  
Phone: (610) 634-3974

ATTN: Project \_\_\_\_\_, Contract Number \_\_\_\_\_

Coordination for each specific test, exact delivery location and dates will be made through the Area Office.

If samples are scheduled to arrive at the laboratory on a weekend (after 1700 Friday through Sunday) notify the laboratory at least 24 hours in advance at (601) 634-3974 to arrange for delivery.

### 3.8 COMPLETION INSPECTION

At the completion of all work or any increment thereof established by a completion time stated in the Special Clause entitled "Commencement, Prosecution, and Completion of Work," or stated elsewhere in the specifications, the CQC system manager shall conduct an inspection of the work and develop a "punch list" of items which do not conform to the approved plans and specifications. Such a list of deficiencies shall be included in the CQC documentation, as required by paragraph DOCUMENTATION below, and shall include the estimated date by which the deficiencies will be corrected. The CQC system manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected and so notify the Government. These inspections and any deficiency corrections required by this paragraph will be accomplished within the time stated for completion of the entire work or any particular increment thereof if the project is divided into increments by separate completion dates.

### 3.9 DOCUMENTATION

The Contractor shall maintain current records of quality control operations, activities, and tests performed, including the work of subcontractors and suppliers. These records shall be on an acceptable form and shall be a complete description of inspections, the results of inspections, daily activities, tests, and other items, including but not limited to the following:

- a. Contractor/subcontractor and their area of responsibility.
- b. Operating plant/equipment with hours worked, idle, or down for repair.
- c. Work performed today, giving location, description, and by whom. When Network Analysis (NAS) is used, identify each phase of work performed each day by NAS activity number.
- d. Test and/or control activities performed with results and references to specifications/plan requirements. The control phase should be identified (Preparatory, Initial, Follow-up). List deficiencies noted along with corrective action.
- e. Material received with statement as to its acceptability and storage.
- f. Identify submittals reviewed, with contract reference, by whom, and action taken.
- g. Off-site surveillance activities, including actions taken.
- h. Job safety evaluations stating what was checked, results, and instructions or corrective actions.
- i. List instructions given/received and conflicts in plans and/or specifications.
- j. Contractor's verification statement.

k. These records shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. The original and one copy of these records in report form shall be furnished to the Government daily within 24 hours after the date(s) covered by the report, except that reports need not be submitted for days on which no work is performed. As a minimum, one report shall be prepared and submitted for every seven days of no work and on the last day of a no work period. All calendar days shall be accounted for throughout the life of the contract. The first report following a day of no work shall be for that day only. Reports shall be signed and dated by the CQC system manager. The report from the CQC system manager shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel.

### 3.10 SAMPLE FORMS

Sample Contractor Quality Control Report forms are enclosed at the end of this section.

### 3.11 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall, after receipt of such notice, immediately take corrective action. Such notice, when delivered to the Contractor at the site of the work, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor. Mobilization, as approved by the Contracting Officer), and shall be updated as required.



TABLE 1  
MINIMUM SAMPLING AND TESTING FREQUENCY

<u>Materials</u>	<u>Test</u>	<u>Minimum Sampling and Testing Frequency</u>
<u>Fills, Embankments, Backfills, Subgrade, and Wearing Course Material</u>		
Fill and Embankment	Field Density <sup>2/12/</sup>	Two tests per lift for each increment or fraction of 2,000 s.y. and any time material type changes.
	Lab Density <sup>3/</sup>	One test initially per each type of materials or blended material and any time material type changes, and one every 10 field density tests.
	Gradation <sup>1/</sup>	One test every 200 cubic yards of fill for each type of materials or blended material and any time material type changes.
Subgrade	Field Density <sup>2/12/</sup>	One test per each increment or fraction of 2,000 s.y.
	Lab Density <sup>3/</sup>	One test every 10 field density tests.
Backfill for Culverts, Trenches, and Other Structures	Field Density <sup>2/12/</sup>	Culverts: One test per each lift.
		Trenches: One test per lift for each increment or fraction of 500 linear feet for backfill. Under pavements, one test every lift and at every crossing.
		Other Structures: One test per lift for each increment or fraction of 200 linear feet of backfill.

TABLE 1 (Continued)

<u>Materials</u>	<u>Test</u>	<u>Minimum Sampling and Testing Frequency</u>
Wearing Course	Lab Density <sup>3/</sup>	One test initially per each type of material or blended material and one every 10 field density tests.
	Gradation <sup>1/</sup>	One test per each type of material or blended material and one every 10 field density tests.
	Gradation <sup>1/</sup> (including .02 mm particles size limits.	1 sample for every 3,000 cy.
	In-Place Density <sup>2/</sup> <sup>12/</sup>	1 sample every 15,000 sy.
	Moisture-Density Relationship <sup>3/</sup>	1 every 15 density tests.
<u>Portland Cement Concrete</u>		
Coarse and Fine Aggregate <sup>7/</sup>	Moisture, specific gravity and absorption <sup>8/</sup>	1 initially.
	Gradation and fineness modules	1 every 250 cy of concrete.
	Moisture, specific gravity and absorption <sup>8/</sup>	(same as coarse aggregate).
Concrete	Slump	Conduct test every day of placement and for every 25 cy and more frequently if batching appears inconsistent. Conduct with strength tests.
	Entrained Air	Conduct with slump test.
	Ambient and concrete temperatures	Conduct with slump tests.
	Unit weight, yield, and water cement ratio	Conduct with strength tests. Check unit weight and adjust aggregate weights to insure proper yield.

TABLE 1 (Continued)

<u>Materials</u>	<u>Test</u>	<u>Minimum Sampling and Testing Frequency</u>
<u>Portland Cement Concrete (Con.)</u>		
	Compressive strength	One set of 3 cylinders per day and every 100 cy for each class of structural concrete. Test one cylinder at 7 days and two at 28 days. Additional field cure cylinders shall be made when insitu strengths are required to be known.
Vibrators	Frequency and amplitude	Check frequency and amplitude initially and any time vibration is questionable.

NOTES:

- 1/ All acceptance tests shall be conducted from in-place samples.
- 2/ Additional tests shall be conducted when variations occur due to the contractors operations, weather conditions, site conditions, etc.
- 3/ Classification (ASTM D-2487), moisture contents, Atterberg limits and specific gravity tests shall be conducted for each compaction test if applicable.
- 4/ through 6/ Not used
- 7/ A petrographic report for aggregate is required with the sample for source approval. If the total amount of all types of concrete is less than 153 cubic meters (200 c.y.) service records from three separate structures in similar environments which used the aggregates may substitute for the petrographic report.
- 8/ Aggregate moisture tests are to be conducted in conjunction with concrete strength tests for w/c calculations.
- 9/ through 11/ Not used
- 12/ The nuclear densometer, if properly calibrated, may be used but only in addition to the required testing frequency and procedures using sandcones. The densometer shall be calibrated and is recommended for use when the time for complete results becomes critical.

TABLE 2  
STANDARD REPORT FORMS AND USE

<u>Form Number</u>	<u>Form Title</u>	<u>Form Use</u>
NPD 300	Transmittal of Material Samples	Form to accompany any samples sent to NPD Laboratory
NPD 326	Compaction Test Data Sheet	Soil compaction tests.
DD 1206	Sieve Analysis Data	Sieve analysis data sheet for soils.
NPD 320	Mechanical Analysis Test Data	Sieve analysis data sheet and hydrometer data sheet for soils.
ENG 2087	Gradation Curves	Gradation graph for soils and aggregates. (To include specification limits).
DD 1205	Soil Moisture Content	Moisture content sheet for soils and/or aggregates.
NPD 322	Specific Gravity and Absorption Test Data Sheet	Specific gravity and absorption test for soil and aggregates.
DD 1209	Atterberg Limits Determinations	Test and graph for Atterburg limits tests.
DD 1217	Bituminous Mix Design -Aggregate Blending	Aggregate blending sheet for asphaltic concrete.
NPD 346	Asphaltic Concrete Mix Design Report	Asphaltic mix design and aggregate grinding.
DD 1218	Marshall Method - Computation of Properties of Asphalt Mixtures	Marshall Test form.
NPD 88	Screen Analysis of Concrete Aggregates	Gradation test form for aggregates (self carboning).
NPD 355	Data Sheet - Compressive and Flexural Strengths of Concrete	Compressive and/or flexural strength testing (include averages per specification).
NPD 359	Report of Concrete Mixture Design	Mix design sheet for Contractor's mix

NPS 57

Statistical Evaluation of  
Concrete Compression Tests

Summary sheet of concrete tests.  
Form can be used for flexural strengths  
if revised to conform with proper days  
specified. A separate sheet is to be  
used for each mix design.

(sample of typical Contractor's Daily Report)  
DAILY CONSTRUCTION QUALITY CONTROL REPORT

Contract Number: \_\_\_\_\_ Date: \_\_\_\_\_ Rpt No. \_\_\_\_\_

Contract Title: \_\_\_\_\_ Location: \_\_\_\_\_

Weather: Clear \_\_\_ P. Cloudy \_\_\_ Cloudy \_\_\_ Rainfall \_\_\_ (\_\_\_% of workday)

Temperature during workday: High \_\_\_\_\_ degrees F. Low \_\_\_\_\_ degrees F.

1. WORK PERFORMED BY CONTRACTOR/SUBCONTRACTOR(S):

<u>Contractor Name</u>	<u>No. of Workers</u>	<u>Crafts/Hours</u>	<u>Work performed</u>
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_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

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2. EQUIPMENT DATA:

<u>Type, Size, Etc.</u>	<u>Owned/Rented</u>	<u>Hours Used</u>	<u>Hours Standby</u>
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3. QUALITY CONTROL INSPECTIONS AND RESULTS: (Include a description of preparatory, initial, and/or follow up inspections or meetings; check of subcontractors work and materials delivered to the site compared to submittals and/or specifications; comments on the proper storage of materials; include comments on corrective actions to be taken):

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4. QUALITY CONTROL TESTING AND RESULTS (comment on tests and attach test reports):

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5. DAILY SAFETY INSPECTIONS (Include comments on new hazards to be added to the Hazard Analysis and corrective action of any safety issues):

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6. REMARKS (Include conversations with or instructions from the Government representatives; delays of any kind that are impacting the job; conflicts in the contract documents; comments on change orders; environmental considerations; etc.):

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CONTRACTOR'S VERIFICATION: The above report is complete and correct. All material, equipment used, and work performed during this reporting period are in compliance with the contract documents except as noted above.

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CONTRACTOR QC REPRESENTATIVE

(Sample of Typical Contractor's Test Report)

TEST REPORT

STRUCTURE OR BUILDING \_\_\_\_\_

CONTRACT NO. \_\_\_\_\_

DESCRIPTION OF ITEM, SYSTEM, OR PART OF SYSTEM TESTED: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

DESCRIPTION OF TEST: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

NAME AND TITLE OF PERSON IN CHARGE OF PERFORMING TESTS FOR THE  
CONTRACTOR:

NAME \_\_\_\_\_

TITLE \_\_\_\_\_

SIGNATURE \_\_\_\_\_

I HEREBY CERTIFY THAT THE ABOVE DESCRIBED ITEM, SYSTEM, OR PART OF SYSTEM  
HAS BEEN TESTED AS INDICATED ABOVE AND FOUND TO BE ENTIRELY SATISFACTORY  
AS REQUIRED IN THE CONTRACT SPECIFICATIONS.

SIGNATURE OF CONTRACTOR  
QUALITY CONTROL INSPECTOR \_\_\_\_\_

DATE \_\_\_\_\_

REMARKS

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

END OF SECTION



## SECTION 01501

### CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

#### PART 1 GENERAL

##### 1.1 AVAILABILITY OF UTILITY SERVICES

###### 1.1.1 Water

The Contractor shall be responsible for providing its own water supply.

###### 1.1.2 Electricity

The Contractor shall be responsible for providing its own electricity.

##### 1.2 SANITARY PROVISIONS

Contractor shall provide sanitary accommodations for the use of employees as may be necessary, shall maintain accommodations approved by the Contracting Officer, and shall comply with the requirements and regulations of the State Health Department, County Sanitarian, or other authorities having jurisdiction.

##### 1.3 TEMPORARY ELECTRIC WIRING

###### 1.3.1 Temporary Power and Lighting

The Contractor shall provide construction power facilities in accordance with the safety requirements of the National Electric Code NFPA No. 70 and the SAFETY AND HEALTH REQUIREMENTS MANUAL EM 385-1-1. The Contractor, or its delegated subcontractor, shall enforce the safety requirements of electrical extensions for the work of subcontractors. Work shall be accomplished by journeyman electricians.

###### 1.3.2 Construction Equipment

In addition to the requirements of SAFETY AND HEALTH REQUIREMENTS MANUAL, EM 385-1-1, temporary wiring conductors installed for operation of construction tools and equipment shall be either Type TW or THW contained in metal raceways, or shall be hard usage or extra hard usage multiconductor cord. Temporary wiring shall be secured above the ground or floor in a workmanlike manner and shall not present an obstacle to persons or equipment. Open wiring may only be used outside of buildings, and then only in accordance with the provisions of the National Electric Code.

###### 1.3.3 Submittals

Submit detailed drawings of temporary power connections. Drawings shall include, but not be limited to, main disconnect, grounding, service drops, service entrance conductors, feeders, GFCI'S, and all site trailer connections.

## 1.4 FIRE PROTECTION

During the construction period, the Contractor shall provide fire extinguishers in accordance with the safety requirements of the SAFETY AND HEALTH REQUIREMENTS MANUAL, EM 385-1-1. The Contractor shall remove the fire extinguishers at the completion of construction. See also, SECTION 01005-SITE SPECIFIC SUPPLEMENTARY REQUIREMENTS, for additional fire protection requirements.

## 1.5 CONTRACTOR FACILITIES

The Contractor's field offices, staging areas, stockpile storage and temporary buildings shall be placed within the rights of way and withdrawn lands areas at location(s) designated on the drawings or as directed by the Contracting Officer. Temporary movement or relocation of Contractor facilities shall be made, only when approved. Borrow areas shall be managed to minimize erosion and to prevent sediment from entering nearby waters. Spoil areas shall be managed and controlled to limit spoil intrusion into areas designated on the drawings and to prevent erosion of soil or sediment from entering nearby waters. Spoil areas shall be developed in accordance with the grading plan indicated on the drawings. Temporary excavation and embankments for plant and/or work areas shall be controlled to protect adjacent areas from despoilment.

Contractor will be provided adequate open staging areas, not to interfere with environmental or cultural resources, as directed by the Contracting Officer. Area is unsecured, and Contractor shall make provisions for its own security. Contractor's staging operations shall under no circumstances occur outside the designated staging area.

Contractor shall be responsible for keeping staging area, and office area clean and free of weeds and uncontrolled vegetation growth. Weeds shall be removed by pulling or cutting to within 1-inch of ground level. Lawn areas shall be mown to keep growth to less than 2-inches. All loose debris and material subject to being moved by prevailing winds in the area shall be picked up or secured at all times.

If the area is not maintained in a safe and clean condition as defined above the Contracting Officer may have the area cleaned by others with the costs being deducted from the Contractor's payment.

## 1.6 HOUSEKEEPING AND CLEANUP

Pursuant to the requirements of Clause CLEANING UP and Clause ACCIDENT PREVENTION, of the CONTRACT CLAUSES, the Contractor shall assign sufficient personnel to insure compliance. The Contractor shall submit a detailed written plan for implementation of this requirement. The plan will be presented as part of the preconstruction safety plan and will provide for keeping the total construction site, structures, and accessways free of debris and obstructions at all times. Work will not be allowed in those areas that, in the opinion of the Contracting Officer, have unsatisfactory cleanup and housekeeping at the end of the preceding day's normal work shift. At least once each day all areas shall be checked by the Quality Control person of the Contractor and the findings recorded on the Quality Control Daily Report. In addition, the Quality Control person shall take immediate action to insure compliance with this requirement. Housekeeping and cleanup shall be assigned by the Contractor to specific personnel. The name(s) of the personnel shall be available at the project site.

## 1.7 PROJECT SIGN

Contractor shall furnish and install one project sign in accordance with conditions hereinafter specified and layout shown on drawing No. 49s-40-05-15, Sheets 1 and 2, except Corps of Engineers' castle and Department of Air Force seal will be Government furnished. All letters shall be block type, upper case. Letters shall be painted as indicated using exterior-type paint. Sign shall be maintained in excellent condition throughout the life of job. Project sign shall be located as directed. Upon completion of project, sign shall be removed and shall remain the property of Contractor.

## 1.8 ELEVATED WORK AREAS

Workers in elevated work areas in excess of 6 feet above an adjoining surface require special safety attention. In addition to the provisions of SAFETY AND HEALTH REQUIREMENTS MANUAL, EM 385-1-1, the following safety measures are required to be submitted to the Contracting Officer's Representative. Prior to commencement of work in elevated work areas, the Contractor shall submit drawings depicting all provisions of his positive fall protection system including, but not limited to, all details of guardrails. Positive protection for workmen engaged in the installation of structural steel and steel joist shall be provided by safety nets, tie-offs, hydraulic man lifts, scaffolds, or other required means. Decking crews must be tied-off or work over nets or platforms not over 6 feet below the work area. Walking on beams and/or girders and the climbing of columns is prohibited without positive protection. Perimeter guardrails shall be installed at floor, roof, or wall openings more than 6 feet above an adjoining surface and on roof perimeters. Rails shall be designed to protect all phases of elevated work including, but not limited to, roofing operations and installation of gutters and flashing. Rails around roofs may not be removed until all work on the roof is complete and all traffic on or across the roof ceases. Rails shall be designed by a licensed engineer to provide adequate stability under any anticipated impact loading. As a minimum, the rails shall consist of a top rail at a height of 1 meter, a mid-rail, and a toe board. Use of tie-offs, hydraulic man lifts, scaffolds, or other means of roof edge protection methods may be utilized on small structures such as family housing, prefabricated metal buildings, etc. If safety belts and harnesses are used, the positive fall protection plan will address fall restraint versus fall arrest. Body belts will ONLY be used for fall restraint, they will not be used for fall arrest.

## 1.9 HARD HAT SIGNS

The Contractor shall provide 610 mm by 610 mm (24 by 24 inch) square Hard Hat Area signs at each entry to the project or work area as directed by the Contracting Officer. A minimum of two signs will be required. Signs shall be in accordance with the sketch at the end of this section.

## 1.10 UTILITIES NOT SHOWN

The Contractor can expect to encounter, within the construction limits of the entire project, utilities not shown on the drawings and not visible as to the date of this contract. If such utilities will interfere with construction operations, he shall immediately notify the Contracting Officer verbally and then in writing to enable a determination by the Contracting Officer as to the necessity for removal or relocation. If such utilities are removed or relocated as directed, the Contractor shall be entitled to equitable adjustment for any additional work or delay. The types of utilities the Contractor may encounter are waterlines, sewer lines (storm and sanitary), gas lines,

fueling lines, steam lines, buried fuel tanks, septic tanks, other buried tanks, communication lines, and power lines. These utilities may be active or abandoned utilities.

#### 1.11 GOVERNMENT WITNESSING AND SCHEDULING OF TESTING

The Contractor shall notify the Contracting Officer, by serial letter, of dates and agenda of all performance testing of the following systems: mechanical (including fire protection) and electrical (including fire protection), not later than 10 calendar days prior to start of such testing. In this notification, the Contractor shall certify that all equipment, materials, and personnel necessary to conduct such testing will be available on the scheduled date and that the systems have been prechecked by him and are ready for performance and/or acceptance testing. Contractor shall also confirm that all operations and maintenance manuals have been submitted and approved. **NO PERFORMANCE AND/OR ACCEPTANCE TESTING WILL BE PERMITTED UNTIL THE OPERATIONS AND MAINTENANCE MANUALS HAVE BEEN APPROVED.**

Government personnel, at the option of the Government, will travel to the site to witness testing. If the testing must be postponed or canceled for whatever reason not the fault of the government, the Contractor shall provide the Government not less than 3 working days advance notice (notice may be faxed) of this postponement or cancellation. Should this 3 working day notice not be given, the Contractor shall reimburse the Government for any and all out of pocket expenses incurred for making arrangements to witness such testing including, but not limited to airline, rental car, meal, and lodging expenses. Should testing be conducted, but fail and have to be rescheduled for any reason not the fault of the Government, the Contractor shall similarly reimburse the Government for all expenses incurred.

#### 1.12 MAINTENANCE OF THREE CREEK ROAD AND SD ROAD

The Contractor shall maintain and repair Three Creek Road and SD Road during construction and after completion of all other contract work to the satisfaction of the Contracting Officer. Activities shall include regrading of ruts and holes and placing of gravel surfacing material to restore damaged road section(s) at locations directed by the Contracting Officer. Gravel surfacing material shall conform to Section 02506, AGGREGATE SURFACE WEARING COURSE except materials shall be spread to a smooth contour and compaction limited to running of hauling trucks back and forth once over the material. Provide dust control for entire haul route, including Three Creek Road if haul route passes on this road, throughout the life of this contract.

#### 1.13 CONSTRUCTION STAGING AREAS FOR SENSITIVE SITES

The Contractor shall review the mitigation plan for generic and specific site restrictions. The mitigation plan identifies sites that exhibit characteristics that are ecologically important. These sites contain special status species or are within or adjacent to large continuous tracks of sagebrush steppe habitat.

The Contractor will restrict movement of construction equipment, staging areas, and materials storage to within the boundaries of the surveyed right-of-ways. The Contractor shall not work outside the existing ROW's.

These sites have been identified as staging areas for the ecologically important sites described in the mitigation plan. These sites include: ND-7, AG, AF, BC, ND-4, AV, AI, AQ, BA, BD, and BG.

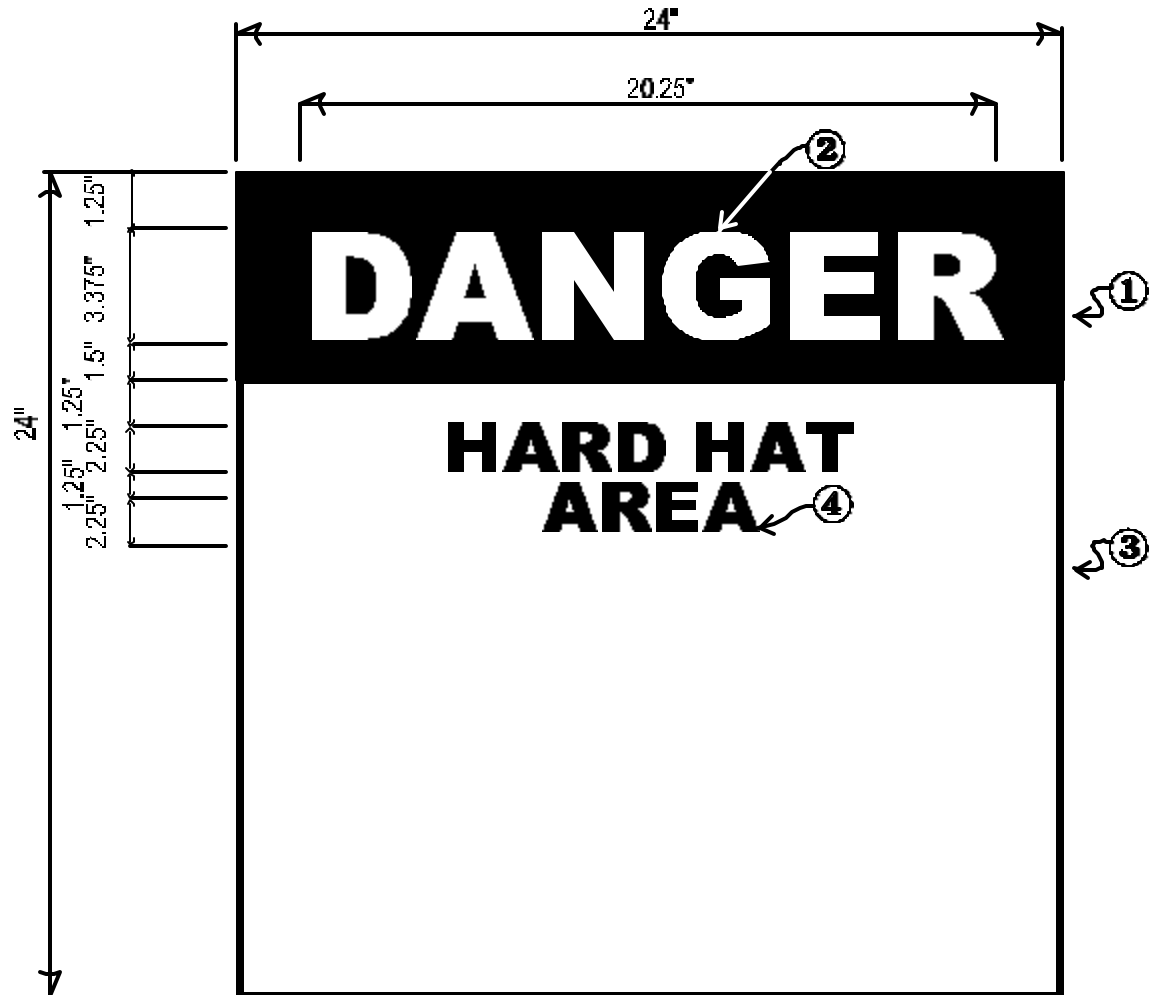
The sensitive sites have been grouped into the following three categories: Grasmere, Saylor Creek, and Juniper Butte. A staging area has been identified in the vicinity of each of these sites. The staging areas shall be within the existing ROW's.

The Grasmere staging area was identified within the community of Grasmere. From this site a Contractor could effectively stage construction activities for the entire western half of ETI. From the site, a Contractor is close enough to ND-4, AV, BG, AQ, and BD that he shouldn't need to store excessive amounts of equipment or materials at these sensitive areas.

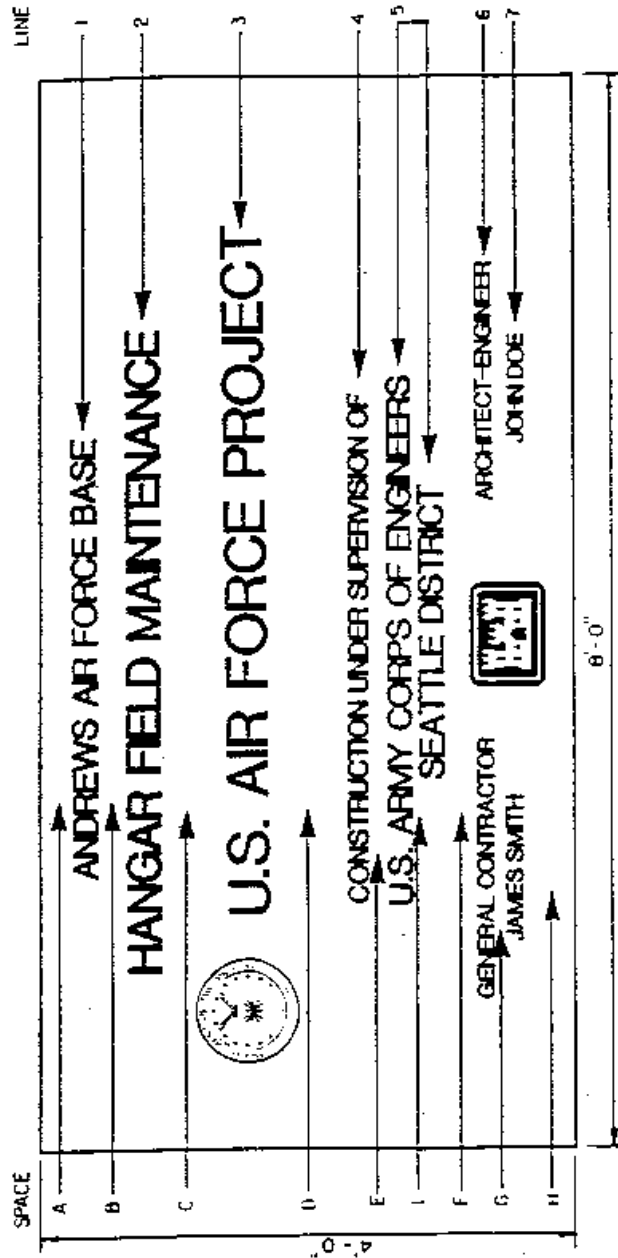
The Saylor Creek Staging area was identified in the ROW to BA, adjacent to the Clover-Three Creek Road. This site is comprised of exotic grasses. After construction, the staging area shall be reseeded using the BLM approved seed mixture used to reseed other sites disturbed by ETI facilities construction. From the Saylor Creek staging area, a Contractor would be able to stage construction of BA and A1.

The Juniper Butte staging area was identified within the boundary of site ND-7. From ND-7, the Contractor would be able to stage construction activities for BC, AG, and AF. However, the Contractor must adhere to timing restrictions outlined in the mitigation plan to minimize disturbance to sage grouse.

## PART 2 PRODUCTS AND PART 3 EXECUTION (NOT APPLICABLE)



- SIGN SHALL BE FABRICATED FROM .125 THICK 6061-T6 ALUMINUM PANEL
- COLOR
  - 1. SAFETY RED (SR)
  - 2. WHITE
  - 3. WHITE
  - 4. BLACK
- LETTERING SHALL BE HELVETICA BOLD TYPOGRAPHY.
- LETTERS AND BACKGROUND SHALL BE REFLECTIVE SHEETING MATERIAL.
- SIGNS SHALL BE POSTED AT 6' - 6" (BOTTOM SIGN TO GRADE) OR AS DIRECTED BY THE CONTRACTING OFFICER.
- LETTERING TO BE CENTERED ON PANEL.



## SAMPLE CONSTRUCTION SIGN FOR MCP PROJECTS

### SCHEDULE

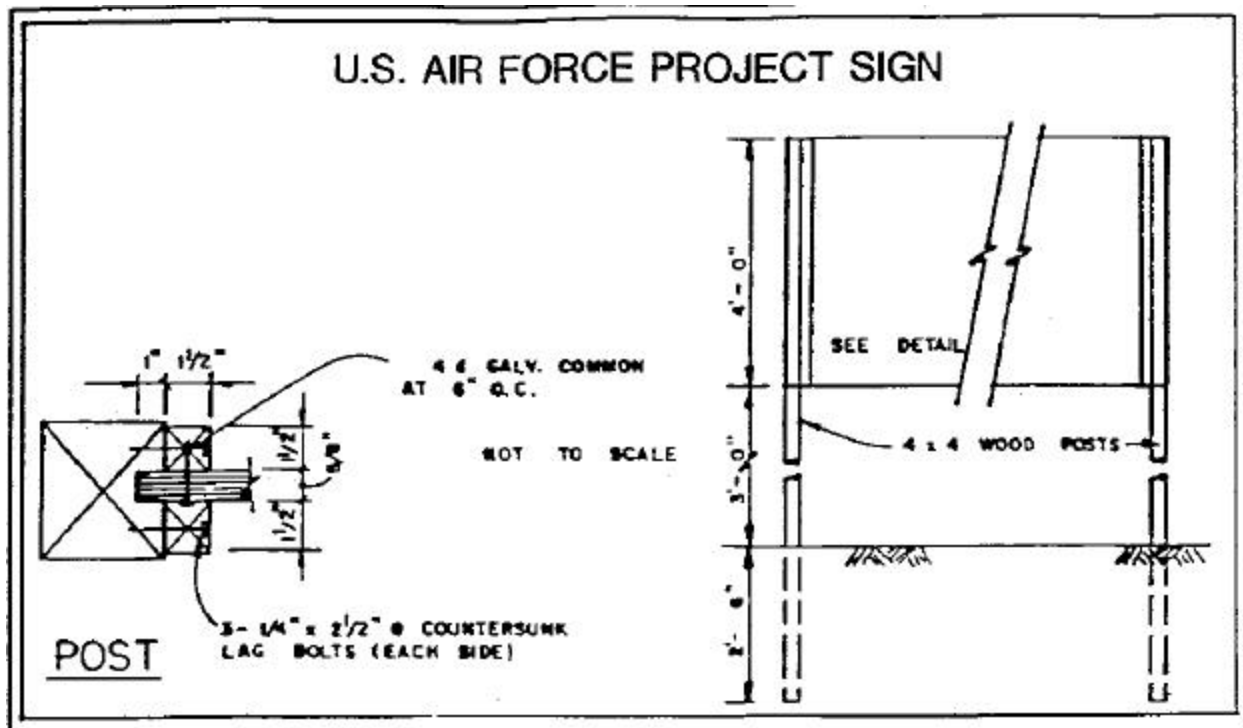
SPACE	HT.	LINE	DESCRIPTION	LETTER	STROKE	HT.
A	2"	1	LOCATION	2	3/8"	1/4"
B	2 5/8"	2	PROJECT NOMENCLATURE *	2	3/4"	3/8"
C	5 3/4"	3	U.S. AIR FORCE PROJECT	4	1/2"	1/2"
D	6"	4	CONSTRUCTION UNDER SUPERVISION OF	1 1/2"	1/8"	1/8"
E	4"	5	CONSTRUCTION AGENCY *	2 3/8"	1/4"	1/4"
F	4"	6	GENERAL CONTRACTOR *	1 3/8"	3/16"	3/16"
G	1"	7	GENERAL CONTRACTOR *	1 3/8"	3/16"	3/16"
H	2 7/8"	*	WILL VARY TO SUIT PROJECT REQUIREMENTS			
I	2"		SEATTLE DISTRICT			

U.S. AIR FORCE

PROJECT

CONSTRUCTION SIGN

Sheet 1 of 2  
U.S. Army Corps of Engineers, Seattle, WA.  
Prepared with report  
Tri B.L.N. DATE: 20 JUNE 84  
Tri B.L.N. File No. 491/40-05-15



## NOTES:

1. Signboard 4' x 8' x 5/8" grade A-C exterior type plywood with medium density overlay on both sides.
2. Paint both sides and edges with one prime coat and two coats of paint, accordance with FED. STD. 595b, color number dark brown 10055 exterior type enamel. Lettering shall be as shown on drawing and shall be FED. STD. 595b, color number white 17925 gloss exterior type enamel.
3. Lettering shall be Helvetica medium
4. Acceptable abbreviations may be used for Contractor's name.
5. Department of Air Force Seal and Corps of Engineers' Castle to be Government furnished.
6. No company logo shall be used.
7. Sign posts and 1-1/2" wood trim shall be stained dark brown.
8. Upon completion of work under this contract, the project sign shall be removed from the job site and shall remain the property of the Contractor.

END OF SECTION



## SECTION 01701

### OPERATIONS AND MAINTENANCE MANUALS

#### PART 1 GENERAL

##### 1.1 SUBMITTALS

Submittals shall be in accordance with SECTION 01330: SUBMITTAL PROCEDURES.

#### PART 2 PRODUCTS (NOT APPLICABLE)

#### PART 3 EXECUTION

##### 3.1 GENERAL

The Contractor shall provide Operation and Maintenance (O&M) manuals for the complete project as applicable under this contract, including all Contractor furnished and installed equipment, systems and materials, and all Government furnished-Contractor installed equipment, systems and materials. Included herein are requirements for compiling and submitting the O&M data. Additional O&M data requirements are specified in the individual sections of the technical specifications. O & M Manual requirements shall be coordinated with the requirements as stated in the other technical specification sections and shall include listings for spare parts, framed instructions, etc.

##### 3.1.1 PREPARATION

Manual preparation shall be under the direction of an individual or organization that has demonstrated expertise and a minimum of 3 years experience in the preparation of comprehensive and complete O&M manuals. Qualifications shall be submitted for Contracting Officer approval.

##### 3.1.2 FORMAT

3.1.2 O&M data shall be separated into distinct systems. O&M manuals for any particular system shall include narrative and technical descriptions of the interrelations with other systems. This narrative shall include a description on how the system works with notable features of the system, including normal and abnormal operating conditions. The explanation of the system is to be short and concise with reference to specific manufacturer's equipment manuals for details (see paragraph CONTENT, subparagraph b). If the quantity of material is such that it will not fit within one binder then it shall be divided into volumes, as required (see paragraph Binders).

3.1.3 Six copies of the complete set of manuals shall be provided for each building (as identified by a building number or building description) for multi-building projects. For those multi-building projects where the work is identical in each building, one copy of the manual is required for each building plus six additional copies. For those projects that do not have work in specific buildings, six copies of the manuals are required for the complete project. Any

project may have a combination of these requirements to determine the total number of copies required.

3.1.4 The requirement for six copies of the O&M manual shall supersede and replace any requirements for a lesser amount of manuals which may be indicated in some specifications. Each set of manuals shall be tailored for its respective building or facility.

### 3.2 PRELIMINARY O&M MANUAL AND DATA SUBMITTAL

To establish and assure uniform O&M manual format, the Contractor shall submit two copies of complete set of O & M data without the binders and receive Contracting Officer approval on one (1) of the sets prior to submission of the final bound manuals. Initial O & M Manual data submittal shall be a minimum of 30 days prior to 90 percent project completion.

The Contractor shall also provide two typewritten pages representing the proposed binder marking format as required under Paragraph: Marking and Binding. One page will represent the front cover/spine and the other page will represent the inside of the front cover.

3.2.1 Data submitted for the manual are to be for the specific equipment furnished, and are in addition to that furnished as shop drawings.

3.2.2 The Contracting Officer will require thirty (30) days for review of submitted O&M manual(s) or data. The Contracting Officer will retain one copy of unacceptable O&M manual submittal and return remainder of copies to the Contractor marked "Returned for Correction." If "Returned for Correction." the Contractor shall resubmit the required number of copies of the manual(s) incorporating all comments, prior to substantial completion and/or use and possession. The Contractor may, at his option, update the copy retained by the Government in lieu of providing the added copy.

3.2.3 For equipment or systems requiring personnel training and/or acceptance testing, all O&M data needed for testing shall be approved by the Contracting Officer prior to the scheduling of the training and/or testing. O&Ms in final bound format shall be submitted in a timely manner so all manuals will be approved in the required quantity, prior to the final inspection. Failure to furnish approved, bound manuals in the required quantity by the final inspection may delay the final inspection and will be cause for the Contracting Officer to hold or adjust the retained percentage in accordance with CONTRACT CLAUSE, PAYMENTS UNDER FIXED PRICE CONSTRUCTION CONTRACTS.

3.2.4 Three of the six completed copies of the final O&M manuals (for each building) shall contain original manufacturer's data. Data in the remaining manuals may be duplicated copies of original data. All data furnished must be of such quality to reproduce clear, legible copies.

### 3.3 BINDERS

#### 3.3.1 Construction and Assembly

Manuals shall be sliding posts or screw-type aluminum binding posts (three screws) with spine, but only one type shall be used for all manuals. The manuals shall be hardback plastic-covered, cleanable, not over 76 mm (3 inches) thick and designed for 216 mm by 279 mm (8-

1/2 by 11 inch) paper. The hard cover shall be of minimum stiffness equal to 2.03 mm (0.080 inch) display board or double weight illustration board.

### 3.3.2 Marking and Binding

As appropriate, systems shall be grouped into four separate categories and bound into four volumes as follows: Mechanical, Electrical, Fire Protection/Security, and Architectural/General.

Each binder shall have the following information, as a minimum, inscribed on both the spine and cover using an offset or silk screen printing process; "EQUIPMENT OPERATION, MAINTENANCE, AND REPAIR MANUAL;" BUILDING NAME, IDENTIFICATION NUMBER (Building No.), LOCATION, AND DISCIPLINE (MECHANICAL, ELECTRICAL, FIRE PROTECTION/SECURITY, ARCHITECTURAL/GENERAL). Contractor's name and address as well as the contract title and contract number shall be printed on the inside of the front cover.

### 3.3.3 Color

Color of binder and printing shall be the option of the Contractor except that; (a) printing color shall contrast with binder color, and (b) colors shall be the same for all manuals.

### 3.3.4 Content

The O&M manuals shall be structured to address each of the following topics in order for each system. When the topic does not apply to a particular system the topic name will be included in the manual with the words "DOES NOT APPLY."

a. Warning Page: A warning page shall be provided to warn of potential dangers (if they exist), such as high voltage, toxic chemicals, flammable liquids, explosive materials, carcinogens, or high pressures. The warning page shall be placed inside the front cover, in front of the title page.

b. Index: Each manual shall have a master index at the front identifying all manuals and volumes and subject matter by system name for each. Following the master index, each manual shall have an index of its enclosures listing each volume, tab numbers, etc., as necessary to readily refer to a particular operating or maintenance instruction. Rigid tabbed flyleaf sheets shall be provided for each separate product and/or piece of equipment under each system in the manual. For example, if a system includes Air Handling Units 1 through 5, there shall be tab sheets AHU-1, AHU-2, AHU-3, AHU-4 and AHU-5. When a manual is divided into volumes, each volume shall have a master index at its front, followed by an index for the specific volume listing in detail all enclosed instructions for materials, individual pieces of equipment, and systems. All pages shall be numbered with the referenced number included in the index.

c. Description: Narrative and technical descriptions of the system and of the interrelations with other systems.

d. Check List Prior to Start Up: Precautions and prechecks prior to start up of equipment and/or system, including safety devices, monitoring devices and control sequence shall be provided.

e. Start Up and Operation: Step-by-step sequential procedures for start up and normal operation checks for satisfactory operation shall be provided. Safety precautions and instructions that should be followed during these procedures shall be incorporated into the operating instructions and flagged for the attention of the operator. Procedures shall include test, manual or normal, and automatic modes.

f. Shutdown: Procedures for normal and emergency shutdown of equipment and/or systems shall be provided. The instructions shall include any procedures necessary for placing the equipment and/or system on standby or preparing the equipment and/or system for start up at a later time. Procedures shall include test, manual or normal, and automatic modes.

g. Operator Preventive Maintenance, Major Maintenance, and Adjustments: The instructions shall include recommended operator preventive maintenance which would normally be performed by operating personnel and adjustment procedures necessary for normal operation. Schedules shall be provided indicating time frames or operating hours for initiating operator maintenance and adjustments, and including manufacturer's recommended major maintenance requirements. Emergency adjustments shall be included and flagged for operator's attention; the instructions shall also include procedures for emergency repairs that could be performed by operating personnel. These emergency repairs or "trouble-shooting guides" shall be outlined in three columns with the following headings:

Column 1 - Trouble  
Column 2 - Probable Cause(s)  
Column 3 - Correction

h. Operator Data: The instructions shall include equipment and/or system layouts showing all piping, wiring, breakers, valves, dampers, controls, etc., complete with diagrams, schematics, isometrics, and data to explain the detailed operation and control of each individual piece of equipment and/or system, including system components. Layouts shall show the location within the facility of controls, valves, switches, dampers, etc., by reference to site location, wing designation, floor, room number, or other clear and concise directions for locating the item. Operator data may be identical to posted data and framed instructions but shall be prepared as part of the O&M manuals. All control systems operations data shall include the following:

(1) A fully labeled control schematic that details all set points, throttling ranges, actions, spans, proportional bands, and any other adjustment.

(2) A fully labeled elementary diagram (ladder diagram).

(3) A sequence of control on the diagrams cross-referenced to the control schematic and elementary diagram.

(4) A generic, functional description of each control component shown on the drawings.

(5) Catalog data of every control device.

i. **Electrical Layout Drawings:** The Electrical O&Ms shall include complete layout drawings and one-line diagrams of exterior and interior electrical with reference to the buildings and site layout. Drawings shall include layout of interior lighting, interior power, intrusion detection systems, communication systems and fire protection systems. Exterior layout drawings shall show where fed from, pad-mount transformer, metering, main distribution panel and communication lines. Layout drawings shall show the location within the facility or reference to the building and the site plan. Layout drawings shall be half size contract as-built drawings and shall be inserted into plastic pockets and installed at the back of the O&Ms that pertain to that particular drawing.

j. **Maintenance Procedures:** Recommended procedures shall indicate preventive maintenance, lubrication, and good housekeeping practices which should be performed by operating personnel as well as more complex maintenance procedures which would normally be performed by trained maintenance personnel only. The procedures shall be presented with a schedule indicating time frames or operating hours for specific maintenance to be accomplished. Safety precautions and instructions that should be followed during these procedures shall be incorporated into the maintenance procedures and flagged for the attention of personnel. The procedures shall include necessary operating instructions for taking equipment off line, putting equipment on line, or putting equipment on standby. The instructions shall include all necessary material, equipment, and system data to perform maintenance work and shall include, but not be limited to, manufacturers/bulletins, catalogs, and descriptive data; certified performance curves, copies of approved test plans, including logs and records of performance acceptance test results, and actual adjustments made during final acceptance and inspection; system layouts, including block diagrams, wiring, control, and isometric diagrams; schematic items within the facility; and interrelationships with other items of system.

k. **Repairs:** Repair procedures shall be presented with a step-by-step procedure for locating and correcting the trouble. A "shop manual" may be used for this purpose. Repair procedures shall be keyed to a troubleshooting guide outlined in three columns with the following headings:

Column 1 - Trouble

Column 2 - Probable Cause(s)

Column 3 - Correction

The procedures shall clearly indicate a major repair activity that should only be performed in a shop or factory versus normal repair work that may be performed onsite or with equipment online. The procedures shall also clearly indicate the limit of repair work that may be performed by Government personnel during the warranty period without voiding warranty provisions. Safety precautions and instructions that should be followed during these procedures shall be incorporated into the repair procedures and flagged for the attention of personnel.

l. **Tools:** The Contractor shall provide one of each nonstandard tool, test instrument, and gauge necessary for performing maintenance and repair work. A nonstandard tool, test instrument, or gauge is defined as an item normally supplied by the manufacturer for the equipment operation or maintenance. The Contractor shall prepare a master list of such items for all equipment and systems and shall key maintenance and repair procedures to this list. The above referenced items for performing maintenance and repair work shall be provided for each individual facility of multifacility projects.

m. **Parts and Supplies:** A complete list of parts and supplies shall be provided with the maintenance instructions. The list shall include all parts and components of individual pieces of equipment, and all parts and components of each system and shall identify such items as description of part, model number, circuit or component identification, etc. Parts and supplies lists shall be included within each volume of maintenance instructions. Further, a master list of spare parts and supplies recommended from each manufacturer for 1 year of operation, including source of supply, shall be sublisted with each instruction.

(1) **Availability:** The Contractor shall list the sources of supply for all parts and supplies, including name of supplier/manufacturer, address, and telephone number. If the parts and supplies are not normally stocked locally, (within 6 hours travel time, round trip by surface transportation) necessary procurement time shall also be a part of the listing.

(2) **Spare Parts:** The Contractor shall provide those spare parts and supplies that are specified in the TECHNICAL SPECIFICATIONS and those which are normally provided with the equipment or material item. A separate master list shall be provided for these items upon turnover to the Government of the parts and supplies.

n. **Maintenance Schedule:** A separate schedule of all required periodic maintenance shall be included. This schedule shall list by frequency of occurrence all lubricants and special adjustments required. The types and amounts of lubrication must be specified. The Contractor shall verify that the furnished maintenance schedule agrees with the published manufacturer's data.

#### 3.3.4.1 Architectural/General O&M:

(1) **Building Products, Applied Materials, and Finishes:** Include product data, with catalog number, size, composition, and color and texture designations. Provide information for re-ordering custom manufactured products. Data shall include, but not be limited to, information on carpet, floor tile, vinyl wall finishes, builder's hardware, etc.

(2) **Instructions for Care and Maintenance:** Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

(3) **Moisture-protection and Weather-exposed Products:** Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.

(4) **Additional Requirements:** As specified in individual specifications sections.

#### 3.3.4.2 Warranties:

In addition to the general warranty required by the contract, the O&M manuals shall include any specific warranties required by other sections of the TECHNICAL SPECIFICATIONS and other warranties normally provided with the particular piece of equipment or system. Extended warranties normally provided by manufacturers that are beyond the warranty of construction shall be specifically noted. The O&M manuals shall also include a specific warranty section

itemizing all standard and extended warranty items. The warranty list shall be as indicated below. Warranties will not begin until the facility is accepted by the Contracting Officer. Copy of warranty shall be included in the manual.

## WARRANTY INFORMATION

Project Title  
Contract Number

General Contractors Name, Phone Number

<u>ITEM DESCRIPTION</u>	<u>START DATE</u>	<u>END DATE</u>	<u>O &amp; M REFERENCE LOCATION</u>
-------------------------	-------------------	-----------------	-------------------------------------

(in alphabetical  
order)

Descriptive Name,  
Manufactures/  
Warrantors Name  
Address & Phone No.

### 3.3.4.3 Installed Equipment Lists:

A copy of the completed Equipment in Place forms required in Section 01705 EQUIPMENT-IN-PLACE -LIST shall be included in the manual. The completed forms shall be located at the front of the catalog and O&M data for the equipment listed on the form.

### 3.3.4.4 Data Layout:

(1) Data Identification: Catalog data shall be marked to clearly identify pertinent data by highlighting the data with pointers or crossing out all nonpertinent data.

(2) Drawings: All drawings bound in the manuals shall be of such size that will require only one fold made right to left. All larger size drawings shall be inserted into a separate pocket in the required location in the manual. All drawings shall be of microfilm quality.

(3) Posted Data: The Contractor shall provide posted data for equipment or systems, in addition to O&M manuals, and as required by other Technical Specifications sections. The data shall consist of as-built schematics of all wiring, controls, piping, etc., as necessary for the operation of the equipment or system, and a condensed typewritten description of the system. The posted data may include approved shop drawings, layout drawings, riser, and block diagrams and shall indicate all necessary interrelation with other equipment and systems. The data may be presented in one or several frames, under glass or sheet acrylic glazing, for clarity and convenience of location. The framed data presentation and outline shall be acceptable to and posted at locations designated by the Contracting Officer. The data shall be posted before personnel training or performance testing acceptance for the related items of equipment or system.

(4) Framed Instructions: Typewritten instructions, framed under glass or sheet acrylic glazing, explaining equipment or system prestart checkout, startup, operations and shutdown procedures, safety precautions, preventive maintenance procedures, and normal operation checks for satisfactory performance of the equipment of systems shall be posted in conjunction with the posted data. The framed instructions may be presented in one or several frames for clarity and convenience of location. The instruction presentation and outline shall be acceptable to the Contracting Officer prior to posting, and shall be posted at locations designated by the Contracting Officer. All framed instructions shall be posted before personnel training or performance testing acceptance commences for the related item of equipment or system.

### 3.3.5 Payment

No separate payment will be made for the preparation and submittal of O&M manuals. All costs incurred by the Contractor in the preparation and submittal of O&M manuals shall be considered as part of the price for the equipment and included in the contract price. Approval and acceptance of the final O&M manuals shall be accomplished before final payment is made to the Contractor.

### 3.3.6 Checklist

Contractor shall complete and initial a copy of the O&M Manual Check List which is provided at the end of this section, and forwarded along with ENG form 4025 as part of the O&M Manual submittal to the Contracting Officer for approval.

#### O&M MANUAL - REVIEW CHECKLIST

- ☐ Does the manual cover all equipment furnished under the contract? (Review against equipment schedules on the drawings and/or equipment submittals.)
- ☐ Does the manual clearly highlight all relevant portions or cross out all irrelevant portions of catalog data?
- ☐ Does the manual contain operations data for the equipment? (Step-by-step operating instructions, start up procedures, sequences of operation, precautions.)
- ☐ Does the manual contain maintenance and repair data for the equipment? (Lubrication, dismantling, assembly, adjustment, troubleshooting.)
- ☐ Does the manual contain a separate maintenance schedule listed by frequency of occurrence?
- ☐ Does the manual contain parts lists or parts catalogs for the equipment? Parts catalog or list  
shall contain identification, part numbers, recommended parts to be stocked, and local source of parts.
- ☐ Does the manual contain electrical connection diagrams?



\_\_\_ Does the manual contain control and interlock system diagrams where applicable?

Is every page in the manual numbered and an index provided for ready reference to the data?

Is the cover hard (nonflexible) with the facility name, identification number, location, and system embossed on both the spine and cover? Is the Contractor's name and address, and the contract title and contract number embossed on the inside of the manual cover?

Is the binding screw posts or sliding post?

\_\_\_ Is any of the data in the manual under the binding where it cannot be seen?

\_\_\_ Do three sets of manuals contain all original data sheets and are others clearly legible?

Are system layout drawings provided? (Simplified diagrams for the system as installed.)

\_\_\_ Are all drawings in the manual of such a size that requires one fold right to left, or if a larger size drawing, then inserted into a pocket in the manual?

Note that the above are common requirements to all contracts. Check the specific contract for additional information.

END OF SECTION

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## SECTION 01702

## AS BUILT RECORDS AND DRAWINGS

## PART 1 GENERAL

## 1.1 SUBMITTALS

Data listed in PART 3 of this section shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES. Due dates shall be as indicated in applicable paragraphs and all submittals shall be completed before final payment will be made.

## PART 2 PRODUCTS (NOT APPLICABLE)

## PART 3 EXECUTION

## 3.1 AS-BUILT FIELD DATA

## 3.1.1 General

The Contractor shall keep at the construction site a complete set of full size blueline prints of the contract drawings, reproduced at Contractor expense. During construction, these prints shall be marked to show all deviations in actual construction from the contract drawings. The color red shall be used to indicate all additions and green to indicate all deletions. The drawings shall show the following information but not be limited thereto:

- a. The locations and description of any utility lines and other installations of any kind or description known to exist within the construction area. The location includes dimensions and/or survey coordinates to permanent features.
- b. The locations and dimension of any changes within the building or structure, and the accurate location and dimension of all underground utilities and facilities.
- c. Correct grade or alignment of roads, structures, and utilities if any changes were made from contract plans.
- d. Correct elevations if changes were made in site grading from the contract plans.
- e. Changes in details of design or additional information obtained from working drawings specified to be prepared and/or furnished by the Contractor including, but not limited to, fabrication erection, installation, and placing details, pipe sizes, insulation material, dimensions of equipment foundations, etc.
- f. The topography and grades of all drainage installed or affected as part of the project construction.
- g. All changes or modifications from the original design and from the final inspection.
- h. Where contract drawings or specifications allow options, only the option actually used in the construction shall be shown on the as-built drawings. The option not used shall be deleted.

These deviations shall be shown in the same general detail utilized in the contract drawings. Marking of the prints shall be pursued continuously during construction to keep them up to date. In addition, the Contractor shall maintain full size marked-up drawings, survey notes, sketches, nameplate data, pricing information, description, and serial numbers of all installed equipment. This information shall be maintained in a current condition at all times until the completion of the work. The resulting field-marked prints and data shall be referred to and marked as "As-Built Field Data," and shall be used for no other purpose. They shall be made available for inspection by the Contracting Officer's representative whenever requested during construction and shall be jointly inspected for accuracy and completeness by the Contracting Officer's representative and a responsible representative of the Contractor prior to submission of each monthly pay estimate. Failure to keep the As-Built Field Data (including Equipment-in-Place lists) current shall be sufficient justification to withhold a retained percentage from the monthly pay estimate.

### 3.1.2 Submittal of the As-Built Field Data

Two sets of the As-Built Field Data shall be submitted to the Contracting Officer for review and approval a minimum of 20 calendar days prior to the date of final inspection. If review of the preliminary as-built drawings reveals errors and/or omissions, the drawings will be returned to the Contractor for corrections. The Contractor shall make all corrections and return the drawings for backcheck to the Contracting Officer within 10 calendar days of receipt. When submitted drawings are accepted, one set of marked drawings will be returned to the Contractor for the completion of the as-built drawings.

## 3.2 AS-BUILT ELECTRONIC FILE DRAWINGS

~~3.2.1 The Government will submit to the Contractor one set of the contract drawings original record tracings. These drawings are part of the permanent records of this project and the Contractor will be held responsible for their protection and safety until they are returned to the Contracting Officer. Any drawings damaged or lost by the Contractor shall be satisfactorily replaced in like medium, quality, and size as the originals at the Contractor's expense. The Contractor shall return the contract drawings original record tracings to the Government within 30 calendar days.~~

~~3.2.1.1 The Contractor shall digitize the drawings in AutoCAD electronic file format, to be used for as-built drawings. The electronic file format, layering standards and submittal requirements are specified in paragraphs below.~~

3.2.1 No earlier than 30 days after award the Government will have available for the Contractor one set of AutoCAD electronic file format contract drawings, to be used for preparation of as-built drawings. The electronic file drawings will be available on either 89 mm (3-1/2 inch) 1.44 MB floppy disks or ISO-9660 CD-ROM, as directed by the Contracting Officer. The Contractor has 15 days after the receipt of the electronic file to verify the usability of the AutoCAD files, and bring any discrepancies to the attention of the Contracting Officer. Any discrepancies will be corrected within 15 days and files returned to the Contractor. The Contractor shall incorporate all deviations from the original contract drawings as recorded in the approved 'As-built Field Data' (see paragraph 3.1.2). All revisions and changes shall be incorporated, i.e. items marked "deleted" shall be deleted, new items shall have no clouds, etc.

3.2.2 No later than 30 days after final acceptance a complete set of as-built drawings shall be submitted in AutoCAD electronic file format. The electronic file format, layering standards and submittal requirements are specified in paragraphs below. The as-built drawings shall be done

in a quality equal to that of the originals. Line work, line weights, lettering, and use of symbols shall be the same as the original line work, line weights, and lettering, and symbols. If additional drawings are required they shall be prepared in electronic file format under the same guidance. When final revisions have been completed, each drawings shall be identified with the words "AS-BUILT" in block letters at least 3/8-inch high placed above the title block if space permits, or if not, below the title block between the border and the trim line. The date of completion and the words "REVISED AS-BUILT" shall be placed in the revision block above the latest revision notation.

### 3.2.3 Electronic File Submittal Requirements

3.2.3.1 The AutoCAD electronic file(s) deliverable shall be in AutoCAD release 14 'DWG' binary format. All support files required to display or plot the file(s) in the same manner as they were developed shall be delivered along with the files. These files include but are not limited to Font files, Menu files, Plotter Setup, and Referenced files.

3.2.3.2 Layering shall conform to the guidelines defined by the "MHAFB Civil Engineering CAD Layering Standards", attached at the end of this specification section. An explanatory list of which layer is used at which drawing and an explanatory list of all layers which do not conform to MHAFB Civil Engineering CAD Layering Standards including any user definable fields permitted by the guidelines shall be provided with each submittal.

3.2.3.3 Electronic File Deliverable Media: All electronic files shall be submitted on MS-DOS FAT or extended FAT format 89 mm (3 ½ inch) 1.44 MB floppy disks or ISO 9660 format CD-ROM, as directed by the Contracting Officer. Two complete sets of disks shall be submitted along with one complete set of prints and one complete set of mylars taken from the disks. Each floppy disk shall be clearly marked with typewritten self-adhesive disk labels which shall contain the following information: Contractor's firm name, project name and location, submittal type (AS-BUILT), the name of each file contained within the disk or archive file, the format and version/release number of each file, a disk number indicating the numeric sequence of the disk in the submittal along with the total number of disks in the submittal, and date the disk was made. If submittal is made on CD-ROM, only the Contractor's firm name, project name and location, submittal type (AS-BUILT) and date will be required. Each submittal shall be accompanied by a hard copy transmittal sheet that contains the above information along with a tabulated information about each file, as shown below:

<u>Electronic File Name</u>	<u>Plate Number</u>	<u>Drawing Title</u>
-----------------------------	---------------------	----------------------

Electronic version of the table shall be included with each submittal set of disks.

Electronic version of the table shall be included with each submittal set of disks.

### 3.2.4 Submittal of the Final As-Built Drawings

The final as-built record drawings shall be completed and returned together with the approved preliminary as-built drawings to the COE, Seattle District Office, Survey Branch, Engineering Records, within 30 calendar days of final acceptance. All drawings from the original contract drawings set shall be included, including the drawings where no changes were made. The Government will review all final as-built record drawings for accuracy and conformance to the drafting standards and other requirements contained in DIVISION 1 GENERAL

**REQUIREMENTS.** The drawings will be returned to the Contractor if corrections are necessary. The Contractor shall make all corrections and shall return the drawings to the same office within 7 calendar days of receipt.

3.3 All costs incurred by the Contractor in the preparation and furnishing of as-built drawings in electronic file format shall be included in the contract price and no separate payment will be made for this work. Approval and acceptance of the final as-built record drawings shall be accomplished before final payment is made to the Contractor.

3.4 One set of marked-up as-built blueline prints shall be furnished at the time of system acceptance testing. These as-built blueline prints shall be in addition to the submittals of marked-up as-built blueline prints specified elsewhere in the contract.

MHAFFB CIVIL ENGINEERING CAD LAYERING STANDARDSGENERAL GUIDELINES

1. There will be no numerical layer names. All layers will be in an abbreviated format; example: utilities = util, text = txt.
2. All New buildings will be located by their Geodetic Coordinates.
3. All blocks will be created on layer O.
4. The Contractor shall provide all projects in .DWG file format compatible with AutoCAD Release 13 on either 133 mm or 89 mm (5-1/4 inch or 3-1/2 inch) floppy disks: low or high density is acceptable.
5. The Contractor shall provide a typed copy of layer names, limits, Lt scale, pen configurations, etc., and contents submitted as part of the Design Analysis and the final submittal of the disks.
6. All information shall be drawn at full scale. (1:1)
7. All text shall be in mono.

MANDATORY LAYER NAMES (CIVIL SITE PLANS ONLY)

LAYER NAME	TO INCLUDE	COLOR
BORDER	Border, Title Block, N Arrow, Scale	8 (Dark Grey)
TXT	Title Block, Text, Notes, Dims	11 (Dark Green)
STRUCT	Bldg. Outlines	4 (Cyan)
STRUCT T	Bldg. Numbers	(Red)
CONTOURS	Index & Intermediate    Index/ Intermediate/	4 (Cyan) 1 (Red)
UTILS	All	7 (White)
PAVED	Paved Roads	2 (Yellow)
PAVED T	Street Names	1 (Red)
UNPAVED	Unpaved Roads	1 (Red)

Any specific questions regarding layering standards may be referred to the project engineer.

## RECOMMENDED LAYER TITLES

### Proposed Layers for a CIVIL/SITE Drawing:

Layer List: O (Not Used), BORDER, KEYMAP, SITEPLAN, FTPRINT, SOILBOR, CONTOURS, GRADING, LANDSCP, LAWNSPR, PAVING, WATER, SEWER, STDRAIN, ELECT, COMM, PHONE, NATGAS, SECTIONS, DETAILS, DEMOL, NEW, DIMS, TXT, MISC

### Proposed Layers for a FOUNDATION Drawing:

Layer List: O (Not Used), BORDER, DEMOL, EXISTING, NEW, DIMS, TXT, MISC, KEYMAP, FDPLAN, SECTIONS, DETAILS, MISC

### Proposed Layers for an ARCHITECTURAL Drawing:

Layer List: O (Not Used), BORDER, KEYMAP, FLPLAN, DOORS (SWINGS), WDWS, DIMS, TXT, DEMOL, NEW, SECT, DETAILS, SCHED, INTEL, MISC

### Proposed Layers for a STRUCTURAL Drawing:

Layer List: O (Not Used), BORDER, KEYMAP, FLPLAN, DEMOL, NEW, BLDGSECT, STRDET, DIMS, TXT, MISC

### Proposed Layers for a Roof Drawing:

Layer List: O (Not Used), BORDER, KEYMAP, FLPLAN, ROOFPLAN, ROOFRMG, DEMOL, NEW, DIMS, TXT, MISC

### Proposed Layers for an EXTERIOR ELEVATIONS Drawing:

Layer List: O (Not Used), BORDER, KEYMAP, NELEV, SELEV, EELEV, WELEV, DIMS, TXT, MISC

### Proposed Layers for a MECHANICAL DRAWING:

Layer List: O (Not Used), BORDER, KEYMAP, FLPLAN, DIMS, TXT, WATER, SEWER, HVAC, SPRINKLER, SCHED, MISC

### Proposed Layers for a HVAC Drawing:

Layer List: O (Not Used), BORDER, KEYMAP, FLPLAN, DIMS, TXT, HVAC, CONTROLS, SCHED, MISC

### Proposed Layers for a LIGHTING Drawing:

Layer List: O (Not Used), BORDER, KEYMAP, FLPLAN, ELED, DIMS, TXT, DIAG/SCHEM (DIAGRAMS/SCHEMATICS), SCHED, MISC

### Proposed Layers for an ELECTRICAL Drawing:



Layer List: O (Not Used), BORDER, KEYMAP, FLPLAN, ELECT, DIMS, TXT, DETAILS, DIAGRAMS, SCHED, MISC

Proposed Layers for a COMMUNICATIONS / TELEPHONE Drawing:

Layer List: O (not Used), BORDER, KEYMAP, FLPLAN, PHONEJCK, COMMDEV, CIRCUITS, PANELS, DIMS, TXT, DETAILS, DIAGRAMS, SCHED, MISC

END OF SECTION

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## SECTION 01703

### WARRANTY OF CONSTRUCTION

#### PART 1 GENERAL

##### 1.1 SUBMITTALS

Submittals shall be made in accordance with SECTION 01330: SUBMITTAL PROCEDURES. Submittal dates shall be as defined in PART 3 of this section.

#### PART 2 PRODUCTS (NOT APPLICABLE)

#### PART 3 EXECUTION

##### 3.1 WARRANTY OF CONSTRUCTION (APR 1984) (FAR52.246-21):

3.1.1 In addition to any other warranties in this contract, the Contractor warrants, except as provided in paragraph 3.1.9 of this Clause, that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, or design furnished, or workmanship performed by the Contractor or any subcontractor or supplier at any tier.

3.1.2 This warranty shall continue for a period of 1 year from the date of final acceptance of the work. If the Government takes possession of any part of the work before final acceptance, this warranty shall continue for a period of 1 year from the date the Government takes possession.

3.1.3 The Contractor shall remedy at the Contractor's expense, any failure to conform, or any defect. In addition, the Contractor shall remedy, at the Contractor's expense, any damage to Government-owned or controlled real or personal property, when that damage is the result of:

- a. the Contractor's failure to conform to contract requirements or
- b. any defect of equipment, material, workmanship, or design furnished.

3.1.4 The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for 1 year from the date of repair or replacement.

3.1.5 The Government will notify the Contractor, in writing or by telephone, after the discovery of any failure, defect, or damage and the Contractor shall respond and be on-site to investigate the problem within 1 working day after notification. The Contractor shall furnish, and maintain, a 24 hour emergency telephone number as the point of contact. For failures, defects, or damage causing loss of power or heat, the Contractor shall respond and mitigate problem within 4 hours.

3.1.6 If the Contractor fails to remedy any failure, defect, or damage within 5 working days after receipt of notice, the Government will have the right to replace, repair, or otherwise remedy the failure, defect, or damage at the Contractor's expense.

3.1.7 With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall:

- a. obtain all warranties that would be given in normal commercial practice;
- b. require all warranties to be executed, in writing, for the benefit of the Government, if directed by the Contracting Officer; and
- c. enforce all warranties for the benefit of the Government, if directed by the Contracting Officer.

3.1.8 In the event the Contractor's warranty under paragraph 3.1.2 of this clause has expired, the Government may bring suit at its expense to enforce a subcontractor's, manufacturer's, or supplier's warranty.

3.1.9 Unless a defect is caused by the negligence of the Contractor or subcontractor or supplier at any tier, the Contractor shall not be liable for the repair of any defects of material or design furnished by the Government nor for the repair of any damage that results from any defect in Government-furnished material or design.

3.1.10 This warranty shall not limit the Government's rights under the Inspection of Construction clause of this contract with respect to latent defects, gross mistakes, or fraud.

END OF SECTION

## SECTION 01704

### FORM 1354 CHECKLIST

#### PART 1 GENERAL

##### 1.1 Procedures

The form which is a part of this specification section shall be completed for any project having revisions to real property. The following page contains the basic instructions applicable to the form.

##### 1.2 Submittal

This form shall be submitted for approval, and be approved a minimum of 30 days before final inspection of the project. Failure to have this form completed and approved in time for the final inspection will result in delay of the inspection until the checklist is completed.

#### PARTS 2 AND 3 NOT USED

## INSTRUCTIONS FOR DD FORM 1354 CHECKLIST

The following checklist is only a guide to describe various parts of new and modified construction. Alter this form as necessary or create your own document to give complete accounting of the real property added or deleted for this contract. All items added, deleted, replaced, or relocated within the building 1.5 meter (5 foot line), or on site 1.5 meters (5 feet) beyond the building perimeter must be accounted for completely. Only a few of the most common items beyond the 1.5 meter (5 foot) line are included on the checklist under UTILITIES/SURFACE CONSTRUCTION, add additional items as required by the construction accomplished.. Attach a continuation sheet and use the checklist format to describe other work related to this particular project. Listed on the last page are additional items with units of measure and descriptive terms.

Costs for each item must include material, tax, installation, overhead and profit, bond and insurance costs. This form should be filled out as each item is installed or each phase of work is completed.

TOTAL FOR ALL ITEMS INCLUDING CONTRACT MODIFICATION COSTS ADDED TOGETHER SHOULD EQUAL THE TOTAL CONTRACT PRICE.

NOTE: USE METRIC UNITS OF MEASURE INSTEAD OF ENGLISH UNITS SHOWN.

### KEY TO ABBREVIATIONS

AC - Acres  
BL - Barrels, Capacity  
BTU - British Thermal Unit  
CY - Cubic Yards  
EA - Each  
GA - Gallons, Capacity  
HD - Head  
kV - Kilovolt-Amperes, Capacity (kVA)  
kW - Kilowatts, Capacity  
SE - Seats  
SF - Square Feet  
SY - Square Yard  
MB - Million British Thermal Units  
MI - Miles  
LF - Linear Feet  
KG - Thousand Gallons Per Day, Capacity  
TN - Ton  
# - Number; How Many

**DD FORM 1354 CHECKLIST**  
Transfer of Real Property**CONTRACT****NUMBER:** \_\_\_\_\_**CONTRACT****TITLE:** \_\_\_\_\_**LOCATION:** \_\_\_\_\_

—

1. **DEMOLITION** (Describe each item removed and the cost of removal.)\*2. **RELOCATION** (Describe each item relocated and the cost of relocation.)\*3. **REPLACEMENTS** (Describe each item replaced and replacement cost.)\*

\*Use a continuation sheet if more space is required. Items should be described by quantity and the correct unit of measure.

**4. NEW CONSTRUCTION OVERVIEW: BUILDING(S)/ADDITION(S) TO A BUILDING** - Use a separate checklist for each building and/or addition.

**(1) Outside Dimensions: Length x Width**

- (a) Main Building \_\_\_\_\_
- (b) Offsets \_\_\_\_\_
- (c) Wings \_\_\_\_\_
- (d) Basement \_\_\_\_\_
- (e) Attic \_\_\_\_\_

**(2) Number of Usable Floors:** \_\_\_\_\_

**(3) Construction: Exterior Materials Used**

- (a) Foundation (such as concrete) \_\_\_\_\_
- (b) Floors (such as wood, concrete) \_\_\_\_\_
- (c) Walls (such as wood siding, metal, CMU) \_\_\_\_\_
- (d) Roof (such as metal, comp., built-up) \_\_\_\_\_

**(4) Utilities ENTERING Building:** Measure lineal meters (LF) from Bldg entry to next larger size of pipe

- (a) Water (size & type of pipe; number of lineal meters (LF)) \_\_\_\_\_
- (b) Gas (size & type of pipe; number of lineal meters (LF)) \_\_\_\_\_
- (c) Sewer (size & type of pipe; number of lineal meters (LF)) \_\_\_\_\_
- (d) Electric (phase, voltage, size & type of wire, connected load in amps) \_\_\_\_\_

**(5) Air Conditioning:**

(a) Type _____						
(b) _____			Capacity		Kilograms	
(TONS) _____						
(c) _____	SQ	METERS	(SQ	YDS)	covered	by
system _____						

**(6) Heating:**

- (a) Source \_\_\_\_\_
- (b) Fuel \_\_\_\_\_



**(7) Hot Water Facilities:**

- (a) Capacity Liters (GAL) \_\_\_\_\_  
(b) Temperature Rise \_\_\_\_\_

BUILDING COST: \_\_\_\_\_

**5. BUILDING SYSTEMS (INTERIOR)****A. FIRE PROTECTION:**

Property Code

- (1) (880 50/880-211) CLOSED HEAD AUTO SPRINKLERS - Square Meters (SF) & HD (wet or dry pipe; # of Lineal Meters (LF) of service pipe; type of pipe & # of heads; # of Square Meters (SF) covered by system)

DESCRIPTION:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

COST: \_\_\_\_\_

- (2) (880 50/880-212) OPEN HEAD DELUGE SYSTEM - Square Meters (SF) & HD (# of Lineal Meters (LF) of service pipe; type of pipe; # of heads; # of Square Meters (SF) covered)

DESCRIPTION:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

COST: \_\_\_\_\_

- (3) (880 10/880-221) AUTO FIRE DETECTION SYSTEM - Square Meters (SF) & EA (# of alarms-horns, bells, etc.; # of smoke detectors; # of heat detectors; # of fire alarm panels; # of radio transmitters/antennae)

DESCRIPTION:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

COST: \_\_\_\_\_

- (4) (880 20/880-222) MANUAL FIRE ALARM SYSTEM - EA (# of pull stations; # of alarm horns; # of fire extinguisher cabinets)

## DESCRIPTION:

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COST: \_\_\_\_\_

(5) (880 60/880-231) CO2 FIRE SYSTEM (# of bottles & size of bottles in kilograms (lbs.))  
DESCRIPTION:

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COST: \_\_\_\_\_

(6) (880 60/880-232) FOAM FIRE SYSTEM - EA (# of tanks - capacity in kilograms (lbs.) )  
DESCRIPTION:

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COST: \_\_\_\_\_

(7) (880 60/880-233) OTHER FIRE SYSTEM - EA  
DESCRIPTION:

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COST: \_\_\_\_\_

(8) (880 60/880-234) HALON 1301 FIRE SYSTEM - EA (# of bottles & size of bottles in kilograms (lbs.))  
DESCRIPTION:

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COST: \_\_\_\_\_

**B. SECURITY:**

(1) (880 40/872-841) SECURITY ALARM SYSTEM - EA (name of system installed)  
DESCRIPTION:

\_\_\_\_\_  
—  
\_\_\_\_\_  
—  
\_\_\_\_\_  
—  
COST: \_\_\_\_\_

**C. HEATING/COOLING SYSTEMS**

(1) (826 10/890-126) A/C WINDOW UNITS - kilograms (TN) & Square Meters (SF)-(# of units installed; amount of Square Meters (SF) covered per unit; size & capacity of each unit)  
DESCRIPTION:

\_\_\_\_\_  
—  
\_\_\_\_\_  
—  
\_\_\_\_\_  
—  
COST: \_\_\_\_\_

(2) (826 14/890-125) A/C PLT LESS THAN 4,536 kilograms (5 TN) - kilograms (TN) & square meters (SF)-(# of kilograms (TN); # of square meters (SF) covered)  
DESCRIPTION:

\_\_\_\_\_  
—  
\_\_\_\_\_  
—  
COST: \_\_\_\_\_

(3) (826 13/890-121) A/C PLT 4,536 to 22,680 kilograms (5 TO 25 TN) - kilograms (TN)-(# of kilograms (TN); # of square meters (SF) covered)  
DESCRIPTION:

\_\_\_\_\_  
—  
\_\_\_\_\_  
—  
\_\_\_\_\_  
—  
COST: \_\_\_\_\_

(4) (826 12/826-122) A/C PLT 22,680 to 2,267,962 kilograms (25 TO 100 TN) - kilograms (TN)-(# of kilograms (TN); # of square meters (SF) covered)

## DESCRIPTION:

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COST: \_\_\_\_\_

(5) (826 11/826-123) A/C PLT OVER 2,267,962 kilograms (100 TN) - kilograms (TN)-(# of kilograms (TN); # of square meters (SF) covered)

## DESCRIPTION:

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COST: \_\_\_\_\_

(6) (821 33/821-115) HEATING PLT 220/1026 W (750/3500 MB) - W (MB)-(# of kW (MBH); type of heating system - Ex: Warm air furnace, central)

## DESCRIPTION:

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COST: \_\_\_\_\_

(7) (821 32/821-116) HEATING PLT OVER 1026 W (3500 MB) - W(MB)-(# of kW (MBH); type of heating system)

## DESCRIPTION:

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COST: \_\_\_\_\_

(8) (811 60/811-147) ELEC EMERGENCY POWER GENERATOR-KW-(size of engine; rating of generator in kilowatts & voltage)

## DESCRIPTION:

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COST: \_\_\_\_\_

(9) (81190 or 82320-gas) STORAGE TANK FOR HEATING or GENERATOR FUEL-Liters (GA); TYPE; FUEL-(Size, type of tank, kind of fuel & # of liters (gallons))

DESCRIPTION:

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COST: \_\_\_\_\_

### SITE WORK

#### 6. UTILITIES/SURFACE CONSTRUCTION:

(1) (812 41/812-223) PRIM DISTR LINE OH-Lineal Meters (LF)-(# Lineal Meters (LF) of wire; size & type of wire; # of poles; voltage)

DESCRIPTION:

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COST: \_\_\_\_\_

(2) (812/81360) TRANSFORMERS-KVA

POWER POLES-Lineal Meters (LF)

(# poles; # transformers - pad or pole mounted; kVA of wire; # Lineal Meters (LF) of wire)

DESCRIPTION:

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COST: \_\_\_\_\_

(3) (812 40/812-224) SEC DISTR LINE OH-Lineal Meters (LF)-(voltage; size & type of wire; # transformers; kVA; # Lineal Meters (LF) of wire; # of service drops; # poles)

DESCRIPTION:

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COST: \_\_\_\_\_

(4) (812 42/812-225) PRIM DISTR LINE UG-Lineal Meters (LF)-(kVA; voltage; type of conduit & size(encased or direct burial); size & kind of wire inside conduit; Lineal Meters (LF) of wire & conduit)

DESCRIPTION:

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COST: \_\_\_\_\_

(5) (812 42/812-226) SEC DISTR LINE UG-Lineal Meters (LF)-(type of conduit & size; type & size of wires in conduit; Lineal Meters (LF) of conduit & wire inside conduit; voltage)

DESCRIPTION:

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COST: \_\_\_\_\_

(6) (812 30/812-926) EXTERIOR LIGHTING-EA-(streets or parking area lights) (# & type of lights; whether pole mounted or not; # Lineal Meters (LF) of connecting wire if pole mounted)

DESCRIPTION:

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COST: \_\_\_\_\_

(7) (824 10/824-464) GAS MAINS-Lineal Meters (LF) (size, type, & # of Lineal Meters (LF) of pipe)

DESCRIPTION:

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COST: \_\_\_\_\_

(8) (831 90/831-169) SEWAGE SEPTIC TANK-thousand liters (KG)-(size, kind of material, & capacity)

DESCRIPTION:

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COST: \_\_\_\_\_

(9) (832 10/832-266) SANITARY SEWER-Lineal Meters (LF)-(sizes & types of pipes - # of Lineal Meters (LF) of each; # of cleanouts; # & size of manholes)

DESCRIPTION:

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COST: \_\_\_\_\_

(10) (842 10/842-245) WATER DISTR MAINS (POTABLE)-Lineal Meters (LF)-(# Lineal Meters (LF) & size, type of pipe)

DESCRIPTION:

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COST: \_\_\_\_\_

(11) (843 11/843-315) FIRE HYDRANTS-EA-(#; size & type)

DESCRIPTION:

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COST: \_\_\_\_\_

(12) (851 90/851-143) CURBS & GUTTERS-Lineal Meters (LF)-(# Lineal Meters (LF); material; width & height)

DESCRIPTION: (Is curb extruded or standard?)\_

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COST: \_\_\_\_\_

(13) (851 90/851-145) DRIVEWAY-Square Meters (SY)-Square Meters (SY); material used; thickness)

DESCRIPTION:

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COST: \_\_\_\_\_

(14) (851 10/12/851-147) ROAD-Square Meters (SY) & Lineal Meters (LF)-Square Meters (SY); material used; thickness; Lineal Meters (LF) )

DESCRIPTION:

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COST: \_\_\_\_\_

(15) (85210/11 /852-262) VEHICLE PARKING-Square Meters (SY)-Square Meters (SY); material used; thickness; # of bollards; # of wheel stops; # of regular parking spaces; # of handicap spaces)

DESCRIPTION:

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COST: \_\_\_\_\_

(16) (852 20/852-289) SIDEWALKS-Square Meters (SY) & Lineal Meters (LF)-(# Square Meters (SF) & Lineal Meters (LF); dimensions of each section & location; thickness; material used)

DESCRIPTION:

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COST: \_\_\_\_\_



(17) (871 10/871-183) STORM DRAIN DISPOSAL-Lineal Meters (LF)-(# Lineal Meters (LF) of pipe; sizes & types of pipe; # of catch basins & manholes & sizes of each)

DESCRIPTION:

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COST: \_\_\_\_\_

(18) (872 15/872-247) FENCE, SECURITY (ARMS)-Lineal Meters (LF)-(# of Lineal Meters (LF); fence material; # & type of gate(s); # strands of barbed wire on top)

DESCRIPTION:

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COST: \_\_\_\_\_

(19) (87210/12/872-248) FENCE, INTERIOR-Lineal Meters (LF)-(# of Lineal Meters (LF); fence material; # & kind of gate(s))

DESCRIPTION:

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COST: \_\_\_\_\_

(20) (890 70/890-187) UTILITY VAULT(4 or more transformers)- Square Meters (SF) (# Square Meters (SF); dimensions of vault; # of transformers)

DESCRIPTION:

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COST: \_\_\_\_\_

(21) (135 10/135-583) TEL DUCT FACILITY-Lineal Meters (LF)-(# of Lineal Meters (LF); size & type of conduit; type of wire)

DESCRIPTION:

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COST: \_\_\_\_\_

(22) (135 10/135-586) TEL POLE FACILITY-Lineal Meters (LF)-(# Lineal Meters (LF) & type of wire; # of poles)

DESCRIPTION:

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COST: \_\_\_\_\_

7. **INSTALLED EQUIPMENT:** Furnish an Equipment-In-Place List. Any price related to equipment should already be included in this checklist.

8. **SYSTEMS NOT PREVIOUSLY LISTED:** Attach a separate sheet and use the same format to describe the system(s). Example: CATV system, intercom system, or other utilities and surface construction not described on this checklist.

9. **ASBESTOS REMOVAL:** Furnish a description by building of the number of Lineal Meters (LF) of asbestos removed, number of Lineal Meters (LF) of reinsulation, number of Square Meters (SF) of soil encapsulation, and number and size of tanks, etc., where asbestos was removed. Also, identify buildings by their numbers and use.

10. **MAINTENANCE/RENOVATIONS:** List by building number and describe all additions and deletions by quantity and the correct unit of measure. Furnish a cost per building.

**UTILITIES/SURFACE CONSTRUCTION** - Listed below are some additional items which may or may not apply to your contract. EACH item installed on site should be listed and priced separately even if not included on this checklist.

- (1) IRRIGATION SYSTEM(-Lineal Meters (LF) of pipe; size & type of pipe; number and type of heads)
- (2) UNDERGROUND/ABOVEGROUND STORAGE TANKS(-Liters (GA), type of tank; material stored)
- (3) (833-354) DUMPSTER ENCLOSURE(-Square Meters (SF) & dimensions)
- (4) (890-152) UNLOADING PAD(-Square Meters (SY); material)
- (5) SIGNAGE-(Dimensions; material)
- (6) (12580) CATHODIC PROTECTION(kilometers; Lineal Feet) (MI; LF)
- (7) (87270) LIGHTNING PROTECTION-Lineal Feet (LF)
- (8) (81290) POLE DUCT RISER(-Lineal Feet (LF, type of material)
- (9) RAMPS-Square Meters (SF), material; Cubic Meters (CY) if concrete-use code for sidewalk if concrete)
- (10) (89080/890-158) LOAD AND UNLOAD PLATFORM-Square Meters (SF)
- (11) (83240/832-255) INDUSTRIAL WASTE MAIN-Lineal Meters (LF)
- (12) WHEEL STOPS-(EA; size & material)
- (13) (81350) OUTDOOR INTEGRAL DISTR CTR-(kVA)
- (14) (45110) OUTDOOR STORAGE AREA-Square Meters (SF)
- (15) (73055/730-275) BUS/WAIT SHELTER-Square Meters (SF)
- (16) (690-432) FLAGPOLE-(EA; dimensions)
- (17) (93210) SITE IMPROVEMENT-(JOB)
- (18) (93220) LANDSCAPE PLANTING (Hectare (Acre); EA; Square Meters (SF))
- (19) (93230) LANDSCAPE BERMS/MOUNDS-Square Meters (SY)
- (20) (93410) CUT AND FILL-Cubic Meters (CY)
- (21) (843-315) FIRE HYDRANTS-(EA; Type)
- (22) (14970) LOADING AND UNLOADING DOCKS AND RAMPS (not connected to a Bldg)-Square Meters (SF) (23) BICYCLE RACK-(EA)
- (24) (85140/812-928) TRAFFIC SIGNALS-(EA)
- (25) (87210) FENCING OR WALLS-Lineal Meters (LF)
- (26) (15432) RIPRAP-Lineal Meters & Square Meters (LF & SY)
- (27) (75061) GRANDSTAND OR BLEACHERS-(EA; SE)
- (28) 87150/871-187) RETAINING WALLS-Lineal Meters; Square Meters (LF; SY); material

NOTE: 5 Digit Codes-Army; 6 Digit Codes-Air Force

## SECTION 01705

### EQUIPMENT-IN-PLACE LIST

#### PART 1 GENERAL

##### 1.1 SUBMITTALS

Data listed in PART 3 of this section shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES. Due dates shall be as indicated in applicable paragraphs and all submittals shall be completed before final payment will be made.

#### PART 2 PRODUCTS (NOT APPLICABLE)

#### PART 3 EXECUTION

##### 3.1 SUBMITTAL

The final equipment-in-place list shall be completed and returned to the Contracting Officer within 30 calendar days of the final inspection. The Contracting Officer will review all final Equipment-In-Place Lists for accuracy and conformance to the requirements contained in DIVISION 1 GENERAL REQUIREMENTS. The lists shall be returned to the Contractor if corrections are necessary. The Contractor shall make all corrections and shall return the lists to the Contracting Officer within 7 calendar days of receipt.

##### 3.2 EQUIPMENT-IN-PLACE LIST

Contractor shall submit for approval, at the completion of construction, a list of equipment-in-place. This list shall be updated and kept current throughout construction, and shall be jointly inspected for accuracy and completeness by the Contracting Officer's representative and a responsible representative of the Contractor prior to submission of each monthly pay estimate. A sample form showing minimum data required is provided at the end of this section. The EQUIPMENT-IN-PLACE LIST shall be comprised of all equipment falling under one or more of the following classifications:

- a. Each piece of equipment listed on the mechanical equipment schedules.
- b. Each electrical panel, switchboard, and MCC panel.
- c. Each transformer.
- d. Each piece of equipment or furniture designed to be movable.
- e. Each piece of equipment that contains a manufacturer's serial number on the name plate.
- f. All Government furnished, Contractor installed equipment per a. through e. (price data excluded)

The equipment listed above shall be entered in the RMS CQC Module furnished by the Government under the "Installed Property" menu selection.

### 3.3 PAYMENT:

All costs incurred by the Contractor in the preparation and furnishing of Equipment-In-Place Lists shall be included in the contract price and no separate payment will be made for this work. Approval and acceptance of the final Equipment-In Place Lists shall be accomplished before final payment is made to the Contractor.

**EQUIPMENT-IN-PLACE LIST****CONTRACT NO.:** \_\_\_\_\_

Specification Section: \_\_\_\_\_ Paragraph No. \_\_\_\_\_

**ITEM DESCRIPTION:** \_\_\_\_\_

Item Name: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Model Number: \_\_\_\_\_

Capacity: \_\_\_\_\_ Replacement Cost \_\_\_\_\_

**ITEM LOCATION:**

Building Number: \_\_\_\_\_ Room Number: \_\_\_\_\_

or Column Location: \_\_\_\_\_

**MANUFACTURER INFORMATION:**

Manufacturer Name: \_\_\_\_\_

Trade Name (if  
different from item name): \_\_\_\_\_

Manufacturer's Address: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

**WARRANTY PERIOD:** \_\_\_\_\_

CHECKED BY: \_\_\_\_\_

END OF SECTION

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# APPENDIX A • PRE-COMMISSIONING CHECKLIST

APPENDIX A  
PRE-COMMISSIONING CHECKLISTS

Pre-commissioning Checklist - Pump

For Pump:

Checklist Item	Q	M	E	T	C	D	O	U
<b>Installation</b>								
a. Pump grouted in place.	___	___	X	X	X	___	___	___
b. Pump vibration isolation devices functional.	___	___	X	X	X	___	___	___
c. Pump/motor coupling alignment verified.	___	___	X	X	X	___	___	___
d. Piping system installed.	___	___	X	X	X	___	___	___
e. Piping system pressure tested.	___	___	X	X	X	___	___	___
f. Pump not leaking.	___	___	X	X	X	___	___	___
g. Field assembled couplings aligned to meet manufacturer's prescribed tolerances.	___	___	X	X	X	___	___	___
<b>Electrical</b>								
a. Specified Power available to pump disconnect.	___	___	___	X	X	___	___	___
b. Pump rotation verified.	___	___	___	X	X	___	___	___
c. Control system interlocks functional	___	___	___	X	___	___	___	___
d. Verify that power disconnect is located within sight of the unit it controls and labeled.	___	___	___	X	___	___	___	___
<b>Testing, Adjusting, and Balancing (TAB)</b>								
a. Pressure/temperature gauges Installed	___	___	X	___	X	___	___	___
b. Piping system cleaned.	___	___	X	X	X	___	___	___
c. Chemical water treatment complete.	___	___	X	X	X	___	___	___
d. Water balance complete.	___	___	X	___	X	___	___	___
e. Water balance with design maximum flow.	___	___	X	___	X	___	___	___
f. TAB Report submitted.	___	___	X	___	X	___	___	___

Pre-commissioning checklist - Piping  
For Freeze Protection Heating Water Piping System  
Checklist Item

	Q	M	E	T	C	D	O	U
<b>Installation</b>								
a. Piping complete.	___	___	X	___	X	___	___	___
b. As-built shop drawings submitted.	___	___	X	___	X	___	___	___
c. Piping flushed and cleaned.	___	___	X	___	X	___	___	___
d. Strainers cleaned.	___	___	X	___	X	___	___	___
e. Valves installed as required.	___	___	X	___	X	___	___	___
f. Piping insulated as required.	___	___	X	___	X	___	___	___
g. Thermometers and gauges installed as required.	___	___	X	___	X	___	___	___
h. Verify operation of valves.	___	___	X	___	___	___	___	___
i. Air vents installed.	___	___	X	X	X	___	___	___
j. Flexible connectors installed.	___	___	X	X	X	___	___	___
k. Verify that piping has been labeled and valves identified.	___	___	X	___	___	___	___	___
l. All Exposed Piping Insulated.	___	___	X	X	X	___	___	___
<b>Testing, Adjusting, and Balancing (TAB)</b>								
a. Hydrostatic test complete.	___	___	X	___	X	___	___	___
b. TAB operation complete.	___	___	X	___	___	___	___	___

Pre-commissioning Checklist - Ductwork

For Fan Systems:

Checklist Item	Q	M	E	T	C	D	O	U
<b>Installation</b>								
a. Ductwork complete.	___	___	X	___	X	___	___	___
b. As-built shop drawings submitted.	___	___	X	___	X	___	___	___
c. Ductwork leak test complete.	___	___	X	___	X	___	___	___
d. Fire dampers, and access doors installed as required at occupancy separation wall with installation of each verified by the specified team members initialing each location on a copy of the as-built drawings.	___	___	X	___	X	___	___	___
e. Ductwork insulated as required.	___	___	X	___	X	___	___	___
f. Thermometers and gauges installed as required.	___	___	___	___	___	___	___	___
g. Verify open/closed status of dampers.	___	___	X	___	X	___	___	___
h. Flexible connectors installed.	___	___	X	___	X	___	___	___
<b>Testing, Adjusting, and Balancing (TAB)</b>								
a. TAB operation complete.	___	___	X	___	X	___	___	___

Pre-commissioning Checklist - Air Cooled Condensing Unit  
For Condensing Units:

Checklist Item	Q	M	E	T	C	D	O	U
<b>Installation</b>								
a. Condensing unit piped.	___	___	X	X	X	___	___	___
b. Refrigerant pipe leak tested.	___	___	X	X	X	___	___	___
b. Refrigerant pipe evacuated and Charged in accordance with manufacturer's instructions.	___	___	X	X	X	___	___	___
c. Check condenser fans for proper rotation.	___	___	X	___	X	___	___	___
d. Any damage to coil fins has been repaired.	___	___	X	___	X	___	___	___
f. Manufacturer's required maintenance operational clearance provided.	___	___	X	X	X	___	___	___
<b>Electrical</b>								
a. Specified Power available to unit disconnect.	___	___	___	X	X	___	___	___
b. Power available to unit control panel.	___	___	___	X	___	___	___	___
c. Verify that power disconnect is Located within sight of the unit it Controls And Labeled.	___	___	___	X	___	___	___	___
<b>Controls</b>								
a. Unit safety/protection devices tested.	___	___	X	X	___	___	___	___
b. Control system and interlocks installed.	___	___	X	X	___	___	___	___
c. Control system and interlocks operational.	___	___	X	X	___	___	___	___

Pre-commissioning Checklist - LPG Water Heaters

For Water Heater:

Checklist Item	Q	M	E	T	C	D	O	U
<b>Installation</b>								
a. Flue installed.	___	___	X	___	___	___	___	___
b. Hot water piping installed.	___	___	X	___	___	___	___	___
c. Hot water piping tested.	___	___	X	X	___	___	___	___
d. Gas piping installed.	___	___	X	X	X	___	___	___
e. Gas piping tested.	___	___	X	X	X	___	___	___
f. Manufacturer's required maintenance clearance provided.	___	___	X	___	___	___	___	___
<b>Startup</b>								
a. Boiler system cleaned and filled with treated water.	___	___	X	___	___	___	___	___
b. Boiler safety/protection devices, including high temperature burner shut-off, low water cutoff, flame failure, pre and post purge, have been tested.	___	___	___	X	___	___	___	___
d. Verify that PRV rating conforms to Water Heater rating.	___	___	___	X	___	___	___	___
e. Startup and checkout complete.	___	___	X	X	___	___	___	___
f. Combustion efficiency demonstrated.	___	___	X	___	X	___	___	___
<b>Electrical</b>								
a. Verify that power disconnect is Located within sight of the unit Served And Labeled.	___	___	___	X	___	___	___	___
<b>Controls</b>								
a. Hot water pump interlock installed.	___	___	___	X	___	___	___	___
b. Hot water pump interlock tested.	___	___	___	X	___	___	___	___
c. Hot water heating controls operational.	___	___	X	X	___	___	___	___

Pre-commissioning Checklist - Electric Furnace  
For Electric Furnace:  
Checklist Item

	Q	M	E	T	C	D	O	U
<b>Installation</b>								
a. Vibration isolation devices installed.	___	___	X	X	X	___	___	___
b. Access doors/removable panels are Operable and sealed.	___	___	X	___	X	___	___	___
c. Casing undamaged.	___	___	X	X	X	___	___	___
d. Insulation undamaged	___	___	X	X	X	___	___	___
e. Condensate drainage is unobstructed.	___	___	X	X	X	___	___	___
f. Fan belt adjusted.	___	___	X	___	X	___	___	___
a. Any damage to coil fins has been repaired.	___	___	X	___	X	___	___	___
h. Manufacturer's required maintenance clearance provided.	___	___	X	X	X	___	___	___
<b>Electrical</b>								
a. Power available to unit disconnect.	___	___	___	X	___	___	___	___
c. Power available to unit control panel.	___	___	___	X	___	___	___	___
c. Proper motor rotation verified.	___	___	___	___	X	___	___	___
d. Verify that power disconnect is Located within sight of the unit it controls.	___	___	___	X	___	___	___	___
<b>Controls</b>								
a. Verify proper location and Installation of thermostat.	___	___	X	___	___	___	___	___
<b>Testing, Adjusting, and Balancing (TAB)</b>								
a. Construction filters removed and replaced.	___	___	X	___	___	___	___	___
b. TAB results +10%/-0% of L/s cfm shown on drawings	___	___	___	___	___	___	___	___
c. TAB Report submitted.	___	___	X	___	X	___	___	___



Pre-commissioning Checklist - Evaporative Cooler  
For Evaporative Cooler:  
Checklist Item

	Q	M	E	T	C	D	O	U
<b>Installation</b>								
a. Vibration isolation devices installed.	___	___	X	X	X	___	___	___
b. Access doors/removable panels are Operable and sealed.	___	___	X	___	X	___	___	___
c. Casing undamaged.	___	___	X	X	X	___	___	___
d. Insulation undamaged	___	___	X	X	X	___	___	___
e. Fan belt adjusted.	___	___	X	___	X	___	___	___
f. Any damage to coil fins has been repaired.	___	___	X	___	X	___	___	___
g. Manufacturer's required maintenance clearance provided.	___	___	X	X	X	___	___	___
<b>Electrical</b>								
a. Power available to unit disconnect.	___	___	___	X	___	___	___	___
e. Power available to unit control panel.	___	___	___	X	___	___	___	___
c. Proper motor rotation verified.	___	___	___	___	X	___	___	___
f. Verify that power disconnect is Located within sight of the unit it controls.	___	___	___	X	___	___	___	___
<b>Controls</b>								
a. Verify proper location and Installation of thermostat.	___	___	X	___	___	___	___	___
<b>Testing, Adjusting, and Balancing (TAB)</b>								
b. Construction filters removed and replaced.	___	___	X	___	___	___	___	___
b. TAB results +10%/-0% of L/s cfm shown on drawings	___	___	___	___	___	___	___	___
c. TAB Report submitted.	___	___	X	___	X	___	___	___

Pre-commissioning Checklist - Unit Heater

For Unit Heater:

Checklist Item	Q	M	E	T	C	D	O	U
<b>Installation</b>								
a. Any damage to coil fins has been repaired.	___	___	X	___	X	___	___	___
b. Manufacturer's required maintenance/operational clearance provided.	___	___	X	X	X	___	___	___
<b>Electrical</b>								
a. Power available to unit disconnect.	___	___	___	X	___	___	___	___
b. Proper motor rotation verified.	___	___	___	X	X	___	___	___
c. Verify that power disconnect is Located within sight of the unit it controls.	___	___	___	X	___	___	___	___
d. Power available to electric heating coil.	___	___	___	X	___	___	___	___
<b>Controls</b>								
a. Verify proper location and installation of thermostat.	___	___	X	___	___	___	___	___
<b>Testing, Adjusting, and Balancing (TAB)</b>								
a. TAB Report submitted.	___	___	X	___	X	___	___	___

Pre-commissioning Checklist - Exhaust Fan  
For Exhaust Fan:

Checklist Item	Q	M	E	T	C	D	O	U
<b>Installation</b>								
a. Fan belt adjusted.	___	___	X	___	X	___	___	___
<b>Electrical</b>								
a. Power available to fan disconnect.	___	___	___	X	___	___	___	___
b. Proper motor rotation verified.	___	___	___	___	X	___	___	___
b. Verify that power disconnect is Located within sight of the unit it controls.	___	___	___	X	___	___	___	___
<b>Controls</b>								
a. Control interlocks properly installed.	___	___	___	X	___	___	___	___
b. Control interlocks operable.	___	___	___	X	___	___	___	___
b. Dampers/actuators properly installed.	___	___	X	___	___	___	___	___
d. Dampers/actuators operable.	___	___	X	___	___	___	___	___
e. Verify proper location and installation of thermostat.	___	___	X	___	___	___	___	___
<b>Testing, Adjusting, and Balancing (TAB)</b>								
a. TAB results +10%/-0% to cfm shown on drawings	___	___	X	___	X	___	___	___
b. TAB Report submitted.	___	___	X	___	X	___	___	___

Pre-commissioning Checklist - HVAC System Controls  
For HVAC System:

Checklist Item	Q	M	E	T	C	D	O	U
<b>Installation</b>								
a. As-built shop drawings submitted.	___	___	X	X	___	___	___	___
b. Layout of control panel matches drawings.	___	___	X	X	___	___	___	___
c. Framed instructions mounted in or near control panel.	___	___	X	X	___	___	___	___
d. Components properly labeled (on inside and outside of panel).	___	___	X	X	___	___	___	___
e. Control components wired to each labeled terminal strip.	___	___	X	X	___	___	___	___
f. Control wiring labeled at all terminations, splices, and junctions.	___	___	X	X	___	___	___	___
g. Shielded wiring used on electronic sensors.	___	___	X	X	___	___	___	___
<b>Main Power</b>								
a. Specified AC power available to panel.	___	___	___	X	___	___	___	___
<b>Testing, Commissioning, and Balancing</b>								
a. Testing, Commissioning, and Balancing Report submitted.	___	___	X	___	___	___	___	___

# APPENDIX B • FUNCTIONAL PREFORMANCE TESTS CHECKLIST

99065/cs

Enhanced Training in Idaho (ETI), Mt. Home AFB

APPENDIX B  
FUNCTIONAL PERFORMANCE TESTS CHECKLISTS

## Functional Performance Test Checklist - Pumps

### 1. Verify Phase Rotation.

For Pump:

Prior to performing this checklist, ensure that for closed loop systems, system is pressurized and the make-up water system is operational or, for open loop systems, that the sumps are filled to the proper level.

1. Activate pump start using control system commands (all possible combination, on/auto, etc.).

ON \_\_\_\_\_ AUTO \_\_\_\_\_ OFF \_\_\_\_\_

- a. Verify pressure drop across strainer:

Strainer inlet pressure \_\_\_\_\_ psig  
Strainer outlet pressure \_\_\_\_\_ psig

- b. Verify pump inlet/outlet pressure reading, compare to Testing, Adjusting, and Balancing (TAB) Report, pump design conditions, and pump manufacturer's performance.

	DESIGN	TAB	ACTUAL
Pump inlet pressure (psig)	_____	_____	_____
Pump outlet pressure (psig)	_____	_____	_____

- c. Operate pump at shutoff and at 100 percent of designed flow when all components are in full flow. Plot test readings on pump curve and compare results against readings taken from flow measuring devices.

	SHUTOFF	100 percent
Pump inlet pressure (psig)	_____	_____
Pump outlet pressure	_____	_____
Pump flow rate (gpm)	_____	_____

- d. Operate pump at shutoff and at minimum flow or when all components are in full by-pass. Plot test readings on pump curve and compare results against readings taken from flow measuring devices.

	SHUTOFF	100 percent
Pump inlet pressure (psig)	_____	_____
Pump outlet pressure	_____	_____
Pump flow rate (gpm)	_____	_____

2. Verify motor amperage each phase and voltage phase to phase and phase to ground for both the full flow and the minimum flow conditions.

- a. Full flow:

	PHASE 1	PHASE 2	PHASE 3
Amperage	_____	_____	_____
Voltage	_____	_____	_____
Voltage	_____	_____	_____
Voltage to ground	_____	_____	_____

- b. Minimum flow:

	PHASE 1	PHASE 2	PHASE 3
Amperage	_____	_____	_____
Voltage	_____	_____	_____
Voltage	_____	_____	_____
Voltage to ground	_____	_____	_____

3. Unusual vibration, noise, etc.

\_\_\_\_\_  
\_\_\_\_\_

4. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

Signature and Date

Contractor's Chief Quality Control Representative \_\_\_\_\_

Contractor's Mechanical Representative \_\_\_\_\_

Contractor's Electrical Representative \_\_\_\_\_

Contractor's Testing, Adjusting and Balancing  
Representative \_\_\_\_\_

Contractor's Controls Representative \_\_\_\_\_

Contracting Officer's Representative \_\_\_\_\_

Using Agency's Representative \_\_\_\_\_



## Functional Performance Test Checklist - Air Cooled Condensing Unit

## For Condensing Unit:

1. Functional Performance Test: Contractor shall demonstrate operation of refrigeration system as per specifications including the following: Start electric furnace (fan only) to provide load for condensing unit.

Activate controls system start sequence as follows.

a. Start Furnace Fan. Verify control system energizes condensing unit start sequence.

b. Shut off furnace equipment to verify condensing unit de-energizes.

c. Restart furnace fan one minute after condensing unit shut down. Verify condensing unit restart sequence.

2. Verify condensing unit amperage each phase and voltage phase to phase and phase to ground.

	PHASE 1	PHASE 2	PHASE 3
Amperage	_____	_____	_____
Voltage	_____	_____	_____
Voltage	_____	_____	_____
Voltage to ground	_____	_____	_____

3. Record the following information:

Ambient dry bulb temperature \_\_\_\_\_ degrees F

Ambient wet bulb temperature \_\_\_\_\_ degrees F

Suction pressure \_\_\_\_\_ psig

Discharge pressure \_\_\_\_\_ psig

4. Unusual vibration, noise, etc.

5. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

Signature and Date

Contractor's Chief Quality Control Representative \_\_\_\_\_

Contractor's Mechanical Representative \_\_\_\_\_

Contractor's Electrical Representative \_\_\_\_\_

Contractor's Testing, Adjusting and Balancing Representative \_\_\_\_\_

Contractor's Controls Representative \_\_\_\_\_

Contracting Officer's Representative \_\_\_\_\_

Using Agency's Representative \_\_\_\_\_

## Functional Performance Test Checklist - Electric Furnace

1. Functional Performance Test: Contractor shall demonstrate operation of the electric furnace as per specifications including the following:

a. Verify furnace unit response to room temperature set point adjustment. Changes to be cooling set point to heating set point and return to cooling set point. \_\_\_\_\_

b. Check blower fan air flow. \_\_\_\_\_ L/s

Check blower fan air flow. \_\_\_\_\_ cfm

c. Check cooling coil suction pressure \_\_\_\_\_ psig

Check cooling coil discharge pressure \_\_\_\_\_ psig

d. Check cooling mode inlet air temperature. \_\_\_\_\_ degrees C

Check cooling mode inlet air temperature. \_\_\_\_\_ degrees F

e. Check cooling mode outlet air temperature. \_\_\_\_\_ degrees C

Check cooling mode outlet air temperature. \_\_\_\_\_ degrees F

f. Check heating coil power draw, \_\_\_\_\_ kW

g. Verify proper operation of heating overtemperature safeties

h. Check heating mode inlet air temperature. \_\_\_\_\_ degrees C

Check heating mode inlet air temperature. \_\_\_\_\_ degrees F

i. Check heating mode outlet air temperature. \_\_\_\_\_ degrees C

Check heating mode outlet air temperature. \_\_\_\_\_ degrees F

2. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

Signature and Date

Contractor's Chief Quality Control Representative \_\_\_\_\_

Contractor's Mechanical Representative \_\_\_\_\_

Contractor's Electrical Representative \_\_\_\_\_

Contractor's Testing, Adjusting and Balancing Representative \_\_\_\_\_

Contractor's Controls Representative \_\_\_\_\_

Contracting Officer's Representative \_\_\_\_\_

Using Agency's Representative \_\_\_\_\_

## Functional Performance Test Checklist - Evaporative Cooler

1. Functional Performance Test: Contractor shall demonstrate operation of the evaporative cooler as per specifications including the following:

a. Verify evaporative cooler response to room temperature set point adjustment. Changes to be cooling set point to heating set point and return to cooling set point.

b. Check blower fan air flow. \_\_\_\_\_ L/s

Check blower fan air flow. \_\_\_\_\_ cfm

c. Verify proper operation of sump water pump. \_\_\_\_\_

d. Check cooling mode inlet air temperature. \_\_\_\_\_ degrees C

Check cooling mode inlet air temperature. \_\_\_\_\_ degrees F

e. Check cooling mode outlet air temperature. \_\_\_\_\_ degrees C

Check cooling mode outlet air temperature. \_\_\_\_\_ degrees F

2. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

Signature and Date

Contractor's Chief Quality Control Representative \_\_\_\_\_

Contractor's Mechanical Representative \_\_\_\_\_

Contractor's Electrical Representative \_\_\_\_\_

Contractor's Testing, Adjusting and Balancing Representative \_\_\_\_\_

Contractor's Controls Representative \_\_\_\_\_

Contracting Officer's Representative \_\_\_\_\_

Using Agency's Representative \_\_\_\_\_

Functional Performance Test Checklist - Unit Heaters

The Contracting Officer will select unit heaters to be spot-checked during the functional performance test.

1. Functional Performance Test: Contractor shall demonstrate operation of selected unit heaters as per specifications including the following:

a. Verify space heater unit heater response to room temperature set point adjustment. Changes to be heating set point to heating set point minus 10 degrees and return to heating set point.

b. Check blower fan speed. \_\_\_\_\_rpm

c. Check heating mode inlet air temperature. \_\_\_\_\_ degrees F

d. Check heating mode outlet air temperature. \_\_\_\_\_ degrees F

2. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

Signature and Date

Contractor's Chief Quality Control Representative \_\_\_\_\_

Contractor's Mechanical Representative \_\_\_\_\_

Contractor's Electrical Representative \_\_\_\_\_

Contractor's Testing, Adjusting and Balancing  
Representative \_\_\_\_\_

Contractor's Controls Representative \_\_\_\_\_

Contracting Officer's Representative \_\_\_\_\_

Using Agency's Representative \_\_\_\_\_

## Functional Performance Test Checklist - HVAC Controls

For HVAC System:

The Contracting Officer will select HVAC control systems to undergo functional performance testing. The number of systems shall not exceed 10.

1. Functional Performance Test: Contractor shall verify operation of HVAC controls by performing the following tests:

a. Verify that controller is maintaining the set point by manually measuring the controlled variable with a thermometer, sling psychrometer, inclined manometer, etc.

b. Verify sensor/controller combination by manually measuring the controlled medium. Take readings from control panel display and compare readings taken manually. Record all readings.

Sensor \_\_\_\_\_

Manual measurement \_\_\_\_\_

Panel reading value \_\_\_\_\_

c. Verify system stability by changing the controller set point as follows:

(1) Air temperature - 10 degrees F

(2) Water temperature - 10 degrees F

(3) Static pressure - 10 percent of set point

d. Verify interlock with other HVAC controls.

e. Verify interlock with fire alarm smoke detectors.

f. Change controller set point 10 percent and verify correct response.

2. Verify that operation of control system conforms to that specified in the statement of work.

3. Verify that the sequence of operation is included in the Operation and Maintenance manual.

4. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

Signature and Date

Contractor's Chief Quality Control Representative \_\_\_\_\_

Contractor's Mechanical Representative \_\_\_\_\_

Contractor's Electrical Representative \_\_\_\_\_

Contractor's Testing, Adjusting and Balancing  
Representative \_\_\_\_\_

Contractor's Controls Representative \_\_\_\_\_

Contractor's Officer's Representative \_\_\_\_\_

Using Agency's Representative \_\_\_\_\_

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## APPENDIX C • GEOTECHNICAL REPORT

**(FY00) ENHANCED TRAINING IN IDAHO  
MOUNTAIN HOME AIR FORCE BASE, IDAHO**

**PROJECT NO. QYZH 00-3008 & QYZH 01-3000**

**GEOTECHNICAL ENGINEERING REPORT**

**OCTOBER 26, 1999**

**PREPARED BY:**

**KLEINFELDER, INC.**



**FY ENHANCED TRAINING IN IDAHO  
MOUNTAIN HOME AIR FORCE BASE, IDAHO  
PN QYZH 00-3008 & QYZH 01-3000**

**1. General.** The Enhanced Training in Idaho project consists of the development of numerous remote sites located in Owyhee County, Idaho. This portion of the development has been subdivided into two separate phases, Phase II and Phase III. Due to project constraints, the area available for geotechnical engineering evaluation was the 4856 hectar Juniper Butte drop site. It is anticipated that the remaining sites will be released for geotechnical evaluation in the future. The following report pertains exclusively to the site improvements planned for the 4856 hectar Juniper Butte drop site.

Improvements planned for the 4856 hectar Juniper Butte drop site consists of:

- New construction and substantial improvement of approximately 5.0 km of Medium Duty Road.
- A new maintenance facility is planned for the northwestern corner of the 4856 hectar Juniper Butte drop site.
- Three individual drop sites will be built. The drop sites will consist of a 122 km<sup>2</sup> Industrial Complex Target, a 279 km<sup>2</sup> FEBA array, and two 20 km<sup>2</sup> surface to air missile (SAM) target sites. One of the SAM target sites is being constructed during Phase I of this project.

It is our understanding that the maintenance complex building will be constructed of concrete masonry unit (CMU), founded on conventional continuous and isolated spread reinforced concrete foundations. Floors will be reinforced concrete slabs-on-grade. Within the maintenance structure a 22 kN Service Crane will be built. An above grade 4,500kg vehicle lift will be installed. Structural loads were not available and therefore assumed for this report. It is anticipated that line loads will not exceed 30 to 51 kN/m. Isolated column loads are anticipated not to exceed 356 to 445 kN.

Sewage generated on site will be disposed of on site. It is anticipated that the on-site disposal system will, at a minimum, consist of a septic tank, distribution box, and drain fields.

In addition to the maintenance structure, a 189 kl water storage tank and several out structures are planned. The proposed tank location is outside the maintenance compound on the western perimeter.

**2. Foundation Exploration.** The subsurface exploration for the maintenance complex was conducted on April 19, 1999 by Kleinfelder Inc. personnel. Hiddelston Drilling, Inc. of Mountain Home, Idaho was retained to perform drilling activities. A total of 5 borings were advanced to depths ranging from 2.1 meters to 2.65 meters below the existing ground surface (bgs). The borings were advanced using an Acker Soil Max drill rig, with a 203 mm hollow stem auger. After the borings were completed, they were backfilled with excavated soil using the equipment at hand.

Standard Penetration Tests (SPT) were performed based on *ASTM D 1586, Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils* procedures. A total of 5 SPT samples were taken. In addition, a Modified split-spoon California samples (COE) were collected. The COE sampling was based on *ASTM D 3550, Standard Practice for Ring-Lines Barrel Sampling of Soils*. Once soil samples were recovered using either the SPT or COE sampler, field classification of samples was performed based on *ASTM D 2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)* procedures.

In addition to the Maintenance Complex subsurface exploration, the subsurface conditions underlying the proposed 122 km<sup>2</sup> Industrial Complex and Phase II SAM site were explained. Subsurface exploration of the SAM site and Industrial Complex consisted of excavating shallow test pits. A total of six test pits were excavated in the proposed Industrial Complex area. Test pits were advanced to depths ranging from 0.61 m to 0.91 m bgs. One test pit was excavated on the proposed Phase II SAM site, the test pit was advanced to a depth of 0.91m bgs. Soil samples collected were visually classified, labeled and sealed in water tight containers to preserve moisture content. Visual classification of soil types was performed based on ASTM D-2488 procedures.

Locations of observation borings for the maintenance complex are shown on the Maintenance Complex Site Plan, Plate 2, Appendix A. Test pit locations for the Industrial complex and Phase II SAM site are illustrated on Plates 3 and 4, Appendix A, respectively.

### **3. Geophysical**

A seismic refraction survey was performed along the proposed medium duty road which provides access to the proposed maintenance facility and 122km Industrial complex. Along the access road alignment forty-four seismic profiles were recorded. Approximately 5 km of roadway was evaluated. Please refer to the attached "Seismic Refraction Survey, Enhanced Training Range," report for a summary of the activities performed and resultant data (Appendix B).

### **4. Description**

- a. Surface Conditions. The 4856 Hector Juniper Butte dropsite is located in Owyhee County, Idaho. Topography in the area is gently rolling hills with drainage generally directed to the northeast. Topographic relief across the entire site is approximately 183 meters. Topographic relief across the proposed maintenance complex and industrial complex sites are 0.6 and 12.2 meters, respectively. The sites are covered by dense to sparse native vegetation.
- b. Subsurface Conditions. In general, the subsurface conditions observed on the Maintenance Complex site consisted of soft, low plasticity silts to a depth of approximately 0.61 meters. This material was underlain by hard, low plasticity silts to a depth of 0.91 meters and was moderately cemented. Poorly graded sand with silt was encountered beneath the silt. These materials were very dense and moderately to strongly cemented. At a depth ranging from approximately 2.1 to 2.9 meters, the site is underlain by very strong vesicular basalt.

Subsurface conditions in the Industrial Complex and Phase II SAM site are similar to those encountered at the maintenance complex. One exception is the depth to bedrock. Equipment refusal was encountered in the strongly cemented sand with silt and in areas on the vesicular basalt. In general, depths to equipment refusal ranged from 0.61 to 1.1 meters.

Please refer to the boring and test pit logs for a detailed description of the subsurface profile. Laboratory test data is included in the boring logs.

- c. Regional Geologic Setting. The site is located in the Owyhee Upland physiographic province which consists of an elevated volcanic plain bordering the south central portion of the Western Snake River Plain, Idaho (Plate 5). The volcanic plain is generally an elevated area of low relief which is mildly inclined toward the north and east. The plain is incised by youth-full drainages which form very steep canyon walls surrounding the Bruneau River and its tributary streams. Topography in the vicinity of the site is subdued with exceptionally steep canyon walls apparent near Juniper Draw, Clover Creek and the East Fork of the Bruneau River toward the northeast. Juniper Butte, which rises approximately 122 meters above the volcanic plain, is apparent toward the southwest of the site. Surface water appears to flow from the north to northeast across the site. Site elevations are approximately 1512 meters for the Maintenance Complex, 1542 and 1527 for the Industrial Complex and Phase II SAM site, respectively (Plate 1).
- d. Site Geologic Conditions. The shallow subsurface beneath the site consists of approximately two to three meters of eolian silts and sand mantling basalt bedrock. The basalt observed in the vicinity of the site was likely derived from extrusions of magma from one or more of the numerous northwest-southeast trending feeder dikes mapped in the area (Bonnichen, 1989). These dike systems also likely resulted in the formation of the Juniper Butte cinder cone. Generally underlying the basalt in the vicinity of the site is a laterally extensive series of Late Miocene aged densely welded, rhyolitic, ash-flow tuffs ranging in thickness from 400 to 475 meters (Bonnichen, 1988). The rhyolitic volcanics were reportedly extruded from the Bruneau-Jarbridge eruptive center onto a highly eroded and down faulted series of older volcanics and sediments. No groundwater was encountered during site exploration activities. However, groundwater in the vicinity of the site is likely contained in joints and fractures cutting the volcanic units and thin sedimentary interbeds which may separate basaltic and rhyolitic rocks.
- e. Groundwater. Soil samples taken during exploration were dry to moist, and no groundwater was encountered to the bottom of the deepest boring at 2.65 meters. Fluctuations in the level of the groundwater and soil moisture conditions may occur due to variations in precipitation, land use, and other factors.
- f. Earthquake Design. The site is located in UBC Seismic Zone 2B, corresponding seismic zone factor is 0.2 (z). If seismic loadings are evaluated using the 1997 UBC method, we

recommend using a seismic coefficient of 0.28 ( $C_a$ ), applicable to the  $S_D$  soil profile, as outlined in Table No. 16-Q of the UBC.

- g. Environmental History. The subject sites are located in a non-developed area. During site reconnaissance and subsequent subsurface exploration no visual or olfactory evidence of contamination was noted. Chemical analysis to determine the presence of absence of such material was not performed. In the event that suspected hazardous material are found during construction, all work should stop and the Corp of Engineers inspector and Base Environmental Officers notified immediately.

## 5. Recommended Foundation Design

- a. Frost Protection. The minimum footing depth to meet Army Corp of Engineers frost protection standards is 940mm below finished grade surface for heated structures and 1240mm for unheated structures.
- b. Soil Properties. Soil engineering parameters were selected based on correlations with SPT Values. Correlators indicate that the internal angle of friction is approximately  $30^\circ$ . Corresponding cohesion was assumed to be zero kPa. It was assumed that the moist unit weight was  $18.8 \text{ kN/m}^3$ .

Soil Properties	
Soil Characteristic	Value
In-situ cohesion (c)	0 kPa
In-situ friction angle ( $\phi$ )	28 degrees
In-situ moist unit weight ( $\gamma$ )	14.92 kPa
Backfill cohesion (c)	0 kPa
Backfill friction angle ( $\phi$ )	35 degrees
Backfill moist unit weight ( $\gamma$ )	19.64 kPa

Lab tests were run in order to find both engineering and index properties of the soil. Gradations were run on several of the samples to spot check the field classifications. The gradations were run following *ASTM C 136 Standard Method for Sieve Analysis of Fine and Coarse Aggregates* and *ASTM D 1140 Standard Test Method for Amount of Material in Soils Finer Than the No. 200 Sieve*. In addition, unit weight and moisture content for selected samples was run using *ASTM D-2216 Standard Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures*

and *ASTM D-2937 Standard Test Method for Density of Soil in Place by the Drive-Cylinder Method*. Laboratory test results have been incorporated into the attached boring and test pit logs.

- c. Bearing Capacity. Allowable bearing pressures were assessed using Terzaghi's Method. For continuous foundations embedded a minimum of 940mm bgs and a minimum of 460mm in width, an allowable bearing pressure of 487 kPa should be used to size foundations. For isolated pier foundations the allowable bearing pressure was developed assuming 940mm of embedment and 920mm x 920mm footprint. Allowable bearing pressure for isolated pier foundations is 534 kPa. Allowable bearing pressures maybe increased by one-third for temporary dynamic loads such as seismic and wind.

Allowable bearing pressures were developed assumably that foundations would bear directly on dense/stiff either compacted structural fill or cemented non-disturbed native soil. It is recommended that the foundation excavations be observed by a geotechnical engineer in order to evaluate weather overexcavation and recompaction is necessary in localized areas.

- d. Floor Slab. Prior to construction of floor slabs, surface vegetation and organic soils should be stripped and removed from the site or stockpiled for use in non-structural areas. It appears 20cm can be used as a reasonable estimate for average depth of stripping. Deeper stripping/grubbing of organic soils, tree roots, etc., may be required in localized areas. Tree root balls should be removed and the resulting voids backfilled with adequately compacted backfill soil. Once slab footprint stripping is completed, the material should be uniformly scarified to a depth of 20 cm and moisture conditioned to optimum moisture content, then compacted to 95% relative compaction per *ASTM D 1557* modified proctor. Concrete slabs should be underlain by a minimum of 15 cm of clean sand. A vapor barrier should be placed at mid-depth in the sand lense.
- e. Earth Pressure. The earth pressure coefficients were calculated using Rankine's method, assuming a level backfill surface and free draining condition. These coefficients account only for the soil pressure, additional pressure due to live and dead loads must also be accounted for as surcharges when computing the earth pressures. The following table summarizes lateral earth pressures.

<u>Earth Pressures</u>	<u>Equivalent Fluid Pressure (EPF)</u>
Active	6.3 KN/m <sup>3</sup>
Passive	59.6
At-rest	9.7
Friction factor	0.4

6. **Temporary Slopes.** The use of steepened, temporary cut slopes will be needed to construct below grade structures. The following criteria have been developed and may be used for construction of temporary cut slopes adjacent to the proposed structures:

<u>Temporary Slope Inclination (Horizontal to Vertical)</u>	<u>Maximum Height (meters)</u>
0.5:1	1.21
1:1	3.05

These layback requirements may require modifications if very loose, cohesionless sands are encountered. Also, the above suggested laybacks are guidelines which may require modification in the field after the start of construction. The contractor is ultimately responsible for the safety of workers and should strictly observe federal and local OSHA requirements for excavation shoring and safety. During wet weather, runoff water should be prevented from entering excavations.

## 7. **Underground Utilities**

- a. **Frost Protection.** The minimum utility depth (to top of utility) to avoid frost damage is 1270mm below finished grade surface.
- b. **Corrosion Protection.** Laboratory results for three samples indicated PH results between 8.4 and 9.1. The resistivity on these same samples showed a range of 6,800 to 18,000 ohm/zm. Low resistivity soils may result in corrosion. Resistivity of soil types on-site ranged from low to relatively high. Therefore, the potential for corrosion is low to moderate.

Based on the results of the seismic refraction survey, the depth to very dense subsurface units ranges 0 to 4 meters. Seismic velocities recorded for these very dense units correlate with non-ripable material. It is anticipated that utility trenches which encounter this material will require rock excavation. An estimated

rock depth profile is presented in the attached Sage Earth Science Report, Page 3, Appendix C.

8. **Recommended Construction And Drainage Considerations.** Final elevations at the site should be planned so that drainage is directed away from all foundations.

Surficial fine grained soil types encountered on-site are considered susceptible to strength loss due to excessive moisture content. During and following construction, grades should be maintained such that drainage is directed away from the proposed development.

Drainage on the maintenance complex should at a minimum consist of the following;

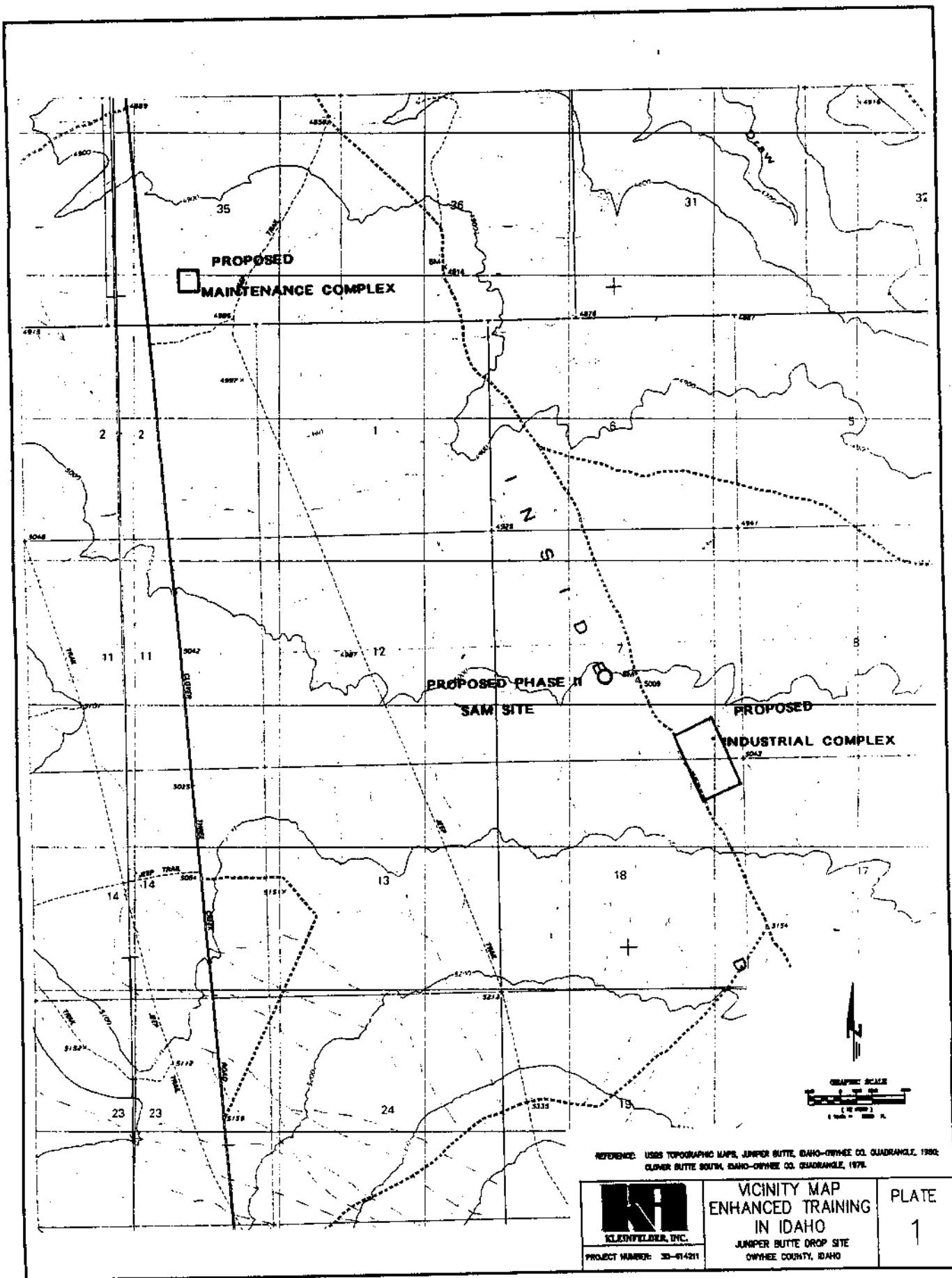
- Grades of at least 2% should be established to direct runoff away from the structure.
- The structure should be fitted with roof gutters and downspouts. Downspouts should convey runoff away from the structure and deposit non-erosively in a stormwater drainage system.
- Parking and walkways within the maintenance complex should be sloped such that runoff is directed away from developed areas and collected in a stormwater drainage system.
- Final grades should be planned such that no ponding or low areas are established.

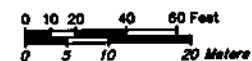
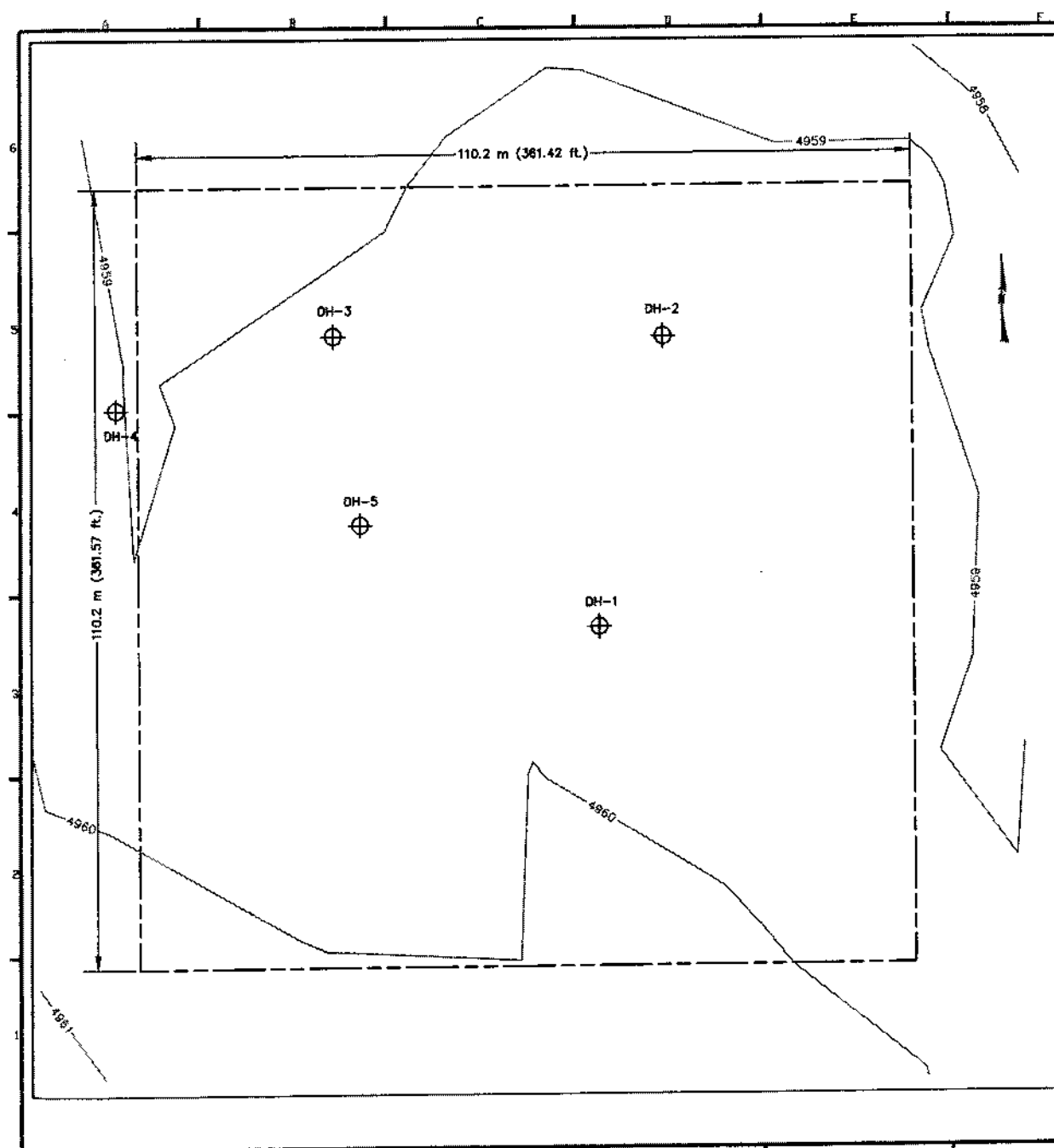
9. **Preparation of Plans and Specifications.** The Technical Manuals and Engineer Technical Letter referenced below shall be reviewed for information relative to preparation of plans and specifications.

a. **References.**

- (1) TM 5-809-1, Structural Design Criteria.
- (2) TM 5-809-10, Seismic Design For Buildings.
- (3) TM 5-822-5, Pavement Design For Roads, Streets, Walks, and Open Storage.





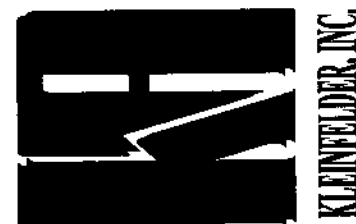


#### LEGEND

- Site Boundary
- New Road Centerline
- Substantial Improvement to Road Centerline
- Some Improvement to Road Centerline
- Road Right-of-Way
- Contour Line

## MAINTENANCE COMPLEX

OWYHEE COUNTY, IDAHO  
ENHANCED TRAINING IN IDAHO

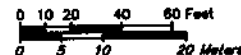


PLATE

2



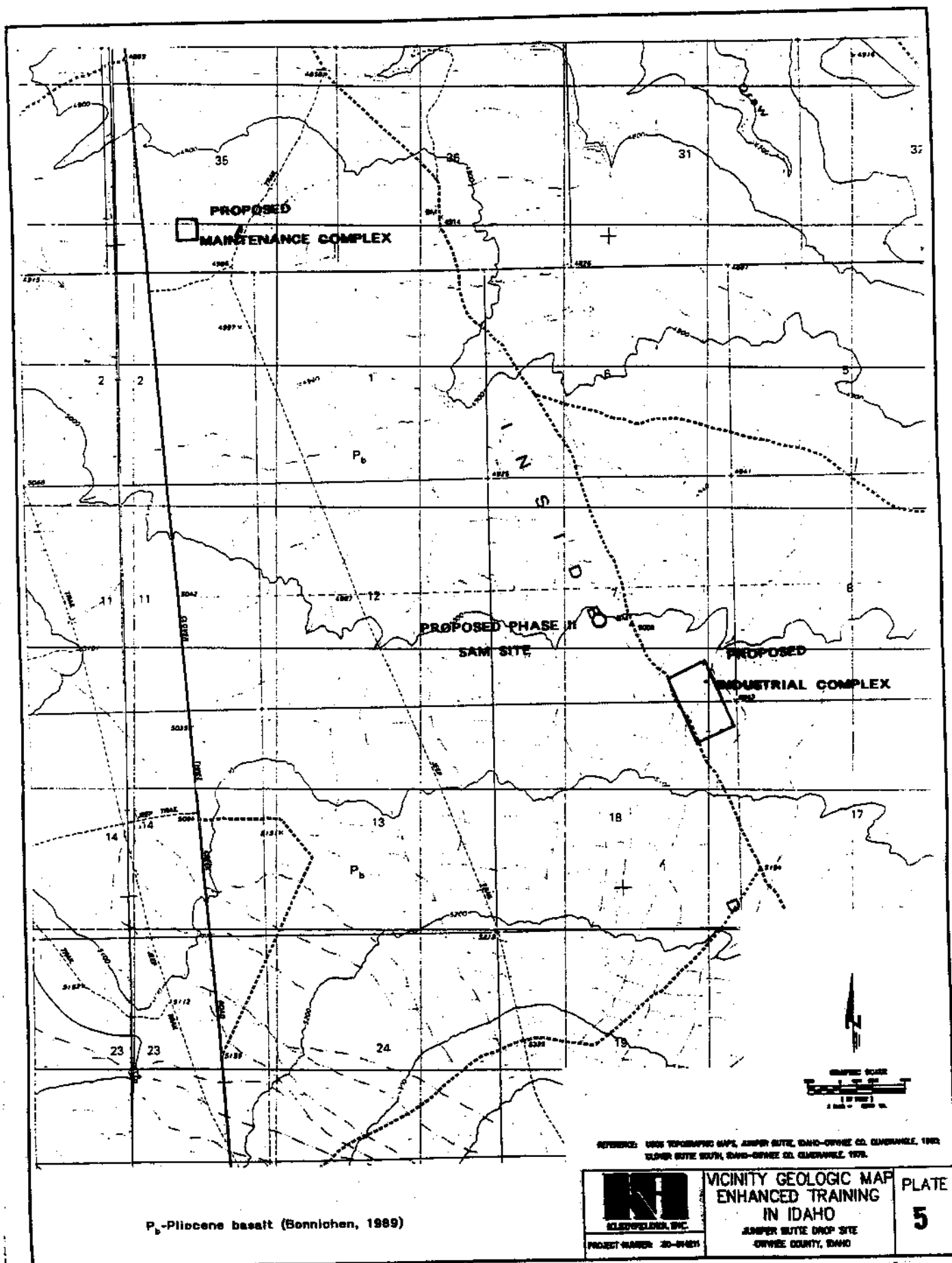
1. Material for Berms will be taken from Site within Limits of Disturbance line. NO Import/Export is Allowed. Re-seed all Disturbed Areas.
2. Contractor will Remain within Limits of Disturbance.



PHASE II S.A.M. DROP SITE  
ENHANCED TRAINING IN IDAHO  
OWYHEE COUNTY, IDAHO

**PLATE**

4



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PROJECT: Mountain Home AFB-ETI  
LOCATION: Juniper Butte, Owyhee County

BORING LOG NO. DH-1  
SHEET 1 of 1

DRILLING CONTRACTOR: Hiddleston Drilling and Pump  
DRILLING EQUIPMENT: Acker Soil Max  
DRILLING METHOD: Rotary 8" Hollow Stem  
DRILLER: Gary Oiler

LOGGED BY: Eric T. Knapp  
DATE OF BORING: 19 April 1999

APPROXIMATE SURFACE ELEVATION: 1512m  
WATER LEVEL(S)/DATE(S): No Groundwater Surface Encountered



DEPTH BELOW SURFACE (FT.)	SAMPLE			SPT RESULTS 6"-6"-6"	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
	INTERVAL (FT.)	TYPE-NUMBER	RECOVERY (IN.)				
1							
2							
3	COE-1	5	23-50/2"			Sandy Silt, (ML)- 49.2% low dry strength; slow dilatency; low toughness; non-plastic; caliche; 50.8% fine grain sand; light brown; dry.	
4							
5	COE-2	7	24-50/4"			Poorly Graded Sand, (SP)- About 80% fine grain sand; about 15% gravel; about 5% fines; caliche; moderate cementation; orange brown; moist.	
6							
7	SPT-1	4	29-50/3"			Poorly Graded Sand, (SP)- About 80% fine grained sand; about 15% gravel; about 5% fines; caliche; moderate cementation; orange brown; moist.	
8							Equipment refusal at 8.0'
9							bgs. Possible bedrock
10							contact (basalt).
11							No groundwater surface
12							encountered.
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							

PROJECT: Mountain Home AFB-ETI  
LOCATION: Juniper Butte, Owyhee County

BORING LOG NO. DH-2  
SHEET 1 of 1

DRILLING CONTRACTOR: Hiddleston Drilling and Pump  
DRILLING EQUIPMENT: Acker Soil Max  
DRILLING METHOD: Rotary 8" Hollow Stem  
DRILLER: Gary Oiler

LOGGED BY: Eric T. Knapp  
DATE OF BORING: 19 April 1999

APPROXIMATE SURFACE ELEVATION: 1512m  
WATER LEVEL(S)/DATE(S): No Groundwater Surface Encountered



DEPTH BELOW SURFACE (FT.)	SAMPLE			SPT RESULTS 6"-6"-6"	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
	INTERVAL (FT.)	TYPE-NUMBER	RECOVERY (IN.)				
1							
2							
3		COE-3	12	38-24-26		Silt, (ML)- Low dry strength; slow dilatency; low toughness; non-plastic; caliche; trace of fine grain sand; tan to light brown; moist. Grades to a poorly graded sand with silt.	
4							
5		COE-4	16	20-25-32		Silt, (ML)- Low dry strength; slow dilatency; low toughness; non-plastic; caliche; trace of fine grain sand; light brown; moist.	
6							
7							
8		SPT-2	5	11-17-16		Silt, (ML)- Low dry strength; slow dilatency; low toughness; non-plastic; caliche; trace of fine grain sand; tan to light brown; moist.	
9							Basalt fragments in sampler tip.
10							Equipment refusal at 9.5' bgs.
11							No groundwater surface encountered.
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							



PROJECT: Mountain Home AFB-ET1  
LOCATION: Junniper Butte, Owyhee County

BORING LOG NO. DH-3  
SHEET 1 of 1

DRILLING CONTRACTOR: Hiddleston Drilling and Pump  
DRILLING EQUIPMENT: Acker Soil Max  
DRILLING METHOD: Rotary 8" Hollow Stem  
DRILLER: Gary Oiler

LOGGED BY: Eric T. Knapp  
DATE OF BORING: 19 April 1999

APPROXIMATE SURFACE ELEVATION: 1512m  
WATER LEVEL(S)/DATE(S): No Groundwater Surface Encountered



DEPTH BELOW SURFACE (FT.)	SAMPLE			SPT RESULTS 6"-6"-6"	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
	INTERVAL (FT.)	TYPE-NUMBER	RECOVERY (IN.)				
1							
2							
3	COE-5	7	20-50/5			Silt, (ML)- Low dry strength; slow dilatency; low toughness; non-plastic; caliche; trace of fine grain sand; moderate cementation; tan to light brown; moist.	
4							
5	COE-6	16	10-16-17			Silt, (ML)- Low dry strength; slow dilatency; low toughness; non-plastic; caliche; trace of fine grain sand; moderate cementation; light brown; moist.	
6							
7	SPT-3	10	19-47-50			Silt, (ML)- Low dry strength; slow dilatency; low toughness; non-plastic; caliche; trace of fine to medium grained sand; low to moderate cementation; tan to light brown; moist.	1.5" layer of caliche in sample. Basalt fragments in sampler tip.
8							
9							Equipment refusal at 9.5' bgs.
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							

PROJECT: Mountain Home AFB-ETI  
LOCATION: Junniper Butte, Owhyee County

BORING LOG NO. DH-4  
SHEET 1 of 1



DRILLING CONTRACTOR: Hiddleston Drilling and Pump  
DRILLING EQUIPMENT: Acker Soil Max  
DRILLING METHOD: Rotary 8" Hollow Stem  
DRILLER: Gary Oiler

LOGGED BY: Eric T. Knapp  
DATE OF BORING: 19 April 1999

APPROXIMATE SURFACE ELEVATION: 1512m  
WATER LEVEL(S)/DATE(S): No Groundwater Surface Encountered



KLEINFELDER, INC.

DEPTH BELOW SURFACE (FT.)	SAMPLE			SPT RESULTS  6"-6"-6"	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
	INTERVAL (FT.)	TYPE-NUMBER	RECOVERY (IN.)				
1							
2							
3		COE-7	11	17-33-50/		Silt, (ML)- Low dry strength; slow dilatency; low toughness; non-plastic; caliche; trace of fine grained sand; moderate to strong cementation; light tan to light brown; moist.	
4							
5							
6		COE-8	14	19-32-50/		Silt, (ML)- Low dry strength; slow dilatency; low toughness; non-plastic; caliche; trace of fine grained sand; moderate to strong cementation; light tan to light brown; moist.	Basalt fragments in sampler tip.
7		SPT-4	0	50/2			No recovery.
8							Equipment refusal at 8.0' bgs.
9							No groundwater surface encountered.
10							
11							
12							
13							
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15							
16							
17							
18							
19							
20							
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23							
24							

PROJECT: Mountain Home AFB-ETI  
LOCATION: Juniper Butte, Owhyee County

BORING LOG NO. DH-5  
SHEET 1 of 1

DRILLING CONTRACTOR: Hiddleston Drilling and Pump  
DRILLING EQUIPMENT: Acker Soil Max  
DRILLING METHOD: Rotary 8" Hollow Stem  
DRILLER: Gary Oiler

LOGGED BY: Eric T. Knapp  
DATE OF BORING: 19 April 1999

APPROXIMATE SURFACE ELEVATION: 1512m  
WATER LEVEL(S)/DATE(S): No Groundwater Surface Encountered



KLEINFELDER, INC.

DEPTH BELOW SURFACE (FT.)	SAMPLE			SPT RESULTS 6"-6"-6"	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
	INTERVAL (FT.)	TYPE-NUMBER	RECOVERY (IN.)				
1							
2							
3		COE-9	14	14-22-26		Silt, (ML)- Low dry strength; slow dilatency; low toughness; non-plastic; caliche; trace of fine grain sand; moderate to strong cementation; light tan to light brown; moist.	
4							
5		COE-10	10	24-26-50/		Silt with Sand, (ML)- About 85% low dry strength; slow dilatency; low toughness; non-plastic; About 15% fine grained sand; caliche; moderate to strong cementation; reddish brown to light brown; dry.	
6							
7		SPT-4	0	50/2			No recovery at 7.0' bgs. Equipment refusal at 7.0' bgs. No groundwater surface encountered.
8							
9							
10							
11							
12							
13							
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22							
23							
24							

PROJECT: Mountain Home AFB-ETI  
LOCATION: Juniper Butte, Owyhee County

TEST PIT NO. T-1  
SHEET 1 of 1

EXCAVATION CONTRACTOR: Ekard Trucking & Excavating  
EXCAVATION EQUIPMENT: Ford 575  
EXCAVATION METHOD: 24" Bucket  
EQUIPMENT OPERATOR: Tyler Ekard

LOGGED BY: E. Knapp  
DATE OF TEST PIT EXCAVATION: 11 May 1999

APPROXIMATE SURFACE ELEVATION: 1540m  
WATER LEVEL(S)/DATE(S): Not Encountered



DEPTH BELOW SURFACE (FT.)	SAMPLE			SPT RESULTS 6"-6"-6" (N)	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
	INTERVAL (FT.)	TYPE-NUMBER	RECOVERY (IN.)				
1						Silt, (ML)- Low plasticity; low dry strength; slow dilatency; low toughness; medium brown; moist; very soft; homogeneous; moderate amount of rootlets; slightly porous.	Becoming strongly cemented @ 2.5' bgs. Equipment refusal @ 3' bgs. No groundwater surface encountered.
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							

PROJECT: Mountain Home AFB-ETI  
LOCATION: Juniper Butte, Owyhee County

TEST PIT NO. T-2  
SHEET 1 of 1

EXCAVATION CONTRACTOR: Ekard Trucking & Excavating  
EXCAVATION EQUIPMENT: Ford 575  
EXCAVATION METHOD: 24" Bucket  
EQUIPMENT OPERATOR: Tyler Ekard



**KLEINFELDER, INC.**

LOGGED BY: E. Knapp  
DATE OF TEST PIT EXCAVATION: 11 May 1999

APPROXIMATE SURFACE ELEVATION: 1542m  
WATER LEVEL(S)/DATE(S): Not Encountered

DEPTH BELOW SURFACE (FT.)	SAMPLE			SPT RESULTS 6"-6"-6" (N)	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
	INTERVAL (FT.)	TYPE-NUMBER	RECOVERY (IN.)				
1						Silt, (ML)- Low plasticity; low dry strength; slow dilatency; low toughness; medium brown; moist; very soft; homogeneous; moderate amount of rootlets; slighty porous.	Becoming strongly cemented @ 2.0' bgs. Equipment refusal @ 2' bgs. No groundwater surface encountered.
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
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23							
24							

PROJECT: Mountain Home AFB-ETI

LOCATION: Junniper Butte, Owyhee County

EXCAVATION CONTRACTOR: Ekard Trucking &amp; Excavating

EXCAVATION EQUIPMENT: Ford 575

EXCAVATION METHOD: 24" Bucket

EQUIPMENT OPERATOR: Tyler Ekard

LOGGED BY: E. Knapp

DATE OF TEST PIT EXCAVATION: 11 May 1999

APPROXIMATE SURFACE ELEVATION: 1539m

WATER LEVEL(S)/DATE(S): Not Encountered

TEST PIT NO. T-3

SHEET 1 of 1



KLEINFELDER, INC.

DEPTH BELOW SURFACE (FT.)	SAMPLE			SPT RESULTS 6"-6"-6" (N)	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
	INTERVAL (FT.)	TYPE-NUMBER	RECOVERY (IN.)				
1						Silt, (ML)- low plasticity; low dry strength; slow dilatency; low toughness; medium brown; moist; very soft; homogeneous; moderate amount of rootlets; slightly porous.	Moderate cementation @ 2' bgs. Equipment refusal at 4.0' bgs. Becoming strongly cemented @ 4.0' bgs. No groundwater surface encountered.
2							
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LOG REVIEWED BY: D. Bruce

KA PROJECT NO. 30-614211.300

TEST PIT NO. T-3

Copyright Kleinfelder, Inc.

SHEET 1 of 1

PROJECT: Mountain Home AFB-ETI  
 LOCATION: Juniper Butte, Owhyee County

TEST PIT NO. T-4  
 SHEET 1 of 1

EXCAVATION CONTRACTOR: Ekard Trucking & Excavating  
 EXCAVATION EQUIPMENT: Ford 575  
 EXCAVATION METHOD: 24" Bucket  
 EQUIPMENT OPERATOR: Tyler Ekard



**KLEINFELDER, INC.**

LOGGED BY: E. Knapp  
 DATE OF TEST PIT EXCAVATION: 11 May 1999

APPROXIMATE SURFACE ELEVATION: 1536m  
 WATER LEVEL(S)/DATE(S): Not Encountered

DEPTH BELOW SURFACE (FT.)	SAMPLE			SPT RESULTS 6"-6"-6" (N)	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
	INTERVAL (FT.)	TYPE-NUMBER	RECOVERY (IN.)				
1						Silt, (ML)- Low plasticity; low dry strength; slow dilatency; low toughness; medium brown; moist; very soft; homogeneous; moderate amount of rootlets; slighty porous.	Equipment refusal @ 3.0' bgs. No groundwater surface encountered.
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3						Basalt/Bedrock @ 3.0'	
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PROJECT: Mountain Home AFB-ETI  
LOCATION: Juniper Butte, Owyhee County

TEST PIT NO. T-5  
SHEET 1 of 1

EXCAVATION CONTRACTOR: Ekard Trucking & Excavating  
EXCAVATION EQUIPMENT: Ford 575  
EXCAVATION METHOD: 24" Bucket  
EQUIPMENT OPERATOR: Tyler Ekard

LOGGED BY: E. Knapp  
DATE OF TEST PIT EXCAVATION: 11 May 1999

APPROXIMATE SURFACE ELEVATION: 1533m  
WATER LEVEL(S)/DATE(S): Not Encountered



DEPTH BELOW SURFACE (FT.)	SAMPLE			SPT RESULTS  6"-6"-6" (N)	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
	INTERVAL (FT.)	TYPE-NUMBER	RECOVERY (IN.)				
1						Silt, (ML)- Low plasticity; low dry strength; slow dilatency; low toughness; medium brown; moist; very soft; homogeneous; moderate amount of rootlets; slighty porous.	Moderate to strong cementation @ 1.5' bgs.  Equipment refusal @ 2.7' bgs.
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PROJECT: Mountain Home AFB-ETI  
 LOCATION: Juniper Butte, Owyhee County  
 EXCAVATION CONTRACTOR: Ekard Trucking & Excavating  
 EXCAVATION EQUIPMENT: Ford 575  
 EXCAVATION METHOD: 24" Bucket  
 EQUIPMENT OPERATOR: Tyler Ekard

TEST PIT NO. T-6  
 SHEET 1 of 1



LOGGED BY: E. Knapp  
 DATE OF TEST PIT EXCAVATION: 11 May 1999

APPROXIMATE SURFACE ELEVATION: 1538m  
 WATER LEVEL(S)/DATE(S): Not Encountered

DEPTH BELOW SURFACE (FT.)	SAMPLE			SPT RESULTS 6"-6"-6" (N)	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
	INTERVAL (FT.)	TYPE-NUMBER	RECOVERY (IN.)				
1						Silt, (ML)- Low plasticity; low dry strength; slow dilatency; low toughness; medium brown; moist; very soft; homogeneous; moderate amount of rootlets; slighty porous.	Moderate to strong cementation @ 1.8' bgs. Equipment refusal @ 2.0' bgs.
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PROJECT: Mountain Home AFB-ETI  
LOCATION: Juniper Butte, Owhyee County

TEST PIT NO. T-7  
SHEET 1 of 1

EXCAVATION CONTRACTOR: Ekard Trucking & Excavating  
EXCAVATION EQUIPMENT: Ford 575  
EXCAVATION METHOD: 24" Bucket  
EQUIPMENT OPERATOR: Tyler Ekard

LOGGED BY: E. Knapp  
DATE OF TEST PIT EXCAVATION: 11 May 1999

APPROXIMATE SURFACE ELEVATION: 1527m  
WATER LEVEL(S)/DATE(S): Not Encountered



DEPTH BELOW SURFACE (FT.)	SAMPLE			SPT RESULTS  6"-6"-6" (N)	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
	INTERVAL (FT.)	TYPE-NUMBER	RECOVERY (IN.)				
1						Silt, (ML)- Low plasticity; low dry strength; slow dilatency; low toughness; medium brown; moist; very soft; homogeneous; moderate amount of rootlets; slightly porous.	Cementation @ 2.0' bgs. Moderate to strong refusal @ 3.0' bgs.
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**Letter Report**

**Seismic Refraction Survey  
Enhanced Training Range**

**Prepared for:  
Kleinfelder, Inc.**

**May 20, 1999**

**Prepared by**

**Sage Earth Science  
2300 North Yellowstone Hwy., Suite #211  
Idaho Falls, ID 83401  
TEL: (208) 522-5049  
FAX: (208) 528-7127  
email: ses@srv.net**

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## **Introduction**

This report describes the performance and results of a seismic refraction survey conducted at the Enhanced Training Area at Mountain Home Air Force Base in Idaho. The survey was performed in May of 1999. Five thousand meters of seismic refraction profile data were acquired and reduced in order to characterize the depth to rock beneath the profile locations.

## **Summary of Conclusions**

Map figure 1 shows the approximate locations of the profiles. Actual locations are marked in the field. Figure 2 presents the results as a single profile. Depths to rock in general are very shallow. The depth along profile averages approximately 2 meters and only deviates moderately from surface to 4 meters over 5,000 meters of profile.

The observed velocity of the near surface sediments is 350 meters per second, typical for dry, fine grained surface materials. The velocity of the refracting layer averaged 2,500 meters per second. The observed velocity of the refracting medium is typical for near surface basalt.

Test pits indicate the presence of a near surface well developed "hard pan" or caliche zone. Depending on the nature of the zone, this layer may serve as the refracting horizon and obscure deeper layers of similar or lower velocity.

## **Description of Surveys**

Seismic data can be used to determine the depth to a refracting geologic interface. Given a setting of increasing seismic velocity with depth, the travel time between seismic source and receiver can be used to determine the depth to a refracting layer. Typically, low velocity sediments or weathered rock will overlie high seismic velocity, more competent rock. This interface makes a suitable target for the seismic refraction method.

The zone of interest for this project was expected to range from near surface, to 5 meters below grade. Typical velocities of near surface sediments can range from 300 to 500 meters per second. Velocities for basalt range from 1,500 meters per second to in excess of 5,000 meters per second depending on depth of burial and degree of fracturing and jointing. These average velocities and the expected depth range were used to design the survey parameters for the project as follows:

- geophone/station spacing: 5 meters
- number of channels: 24
- spread length: 115 meters
- source locations: channels 1, 24, mid point and offset as necessary depending on observed depths.
- energy source: 16 pound hammer
- recording equipment: Bison 9024 - 24 channel digital IFP recording system

- field data filters: 16 - 125 Hz
- sample rate: 0.5 millisecond
- record length: 0.250 seconds
- data reduction method: Generalized Reciprocal Method (GRM)

## Presentation of Seismic Data

### *Profile location*

Figure 1 shows approximate location of the forty-four seismic profiles collected. The actual locations marked in the field. These locations may be surveyed as necessary.

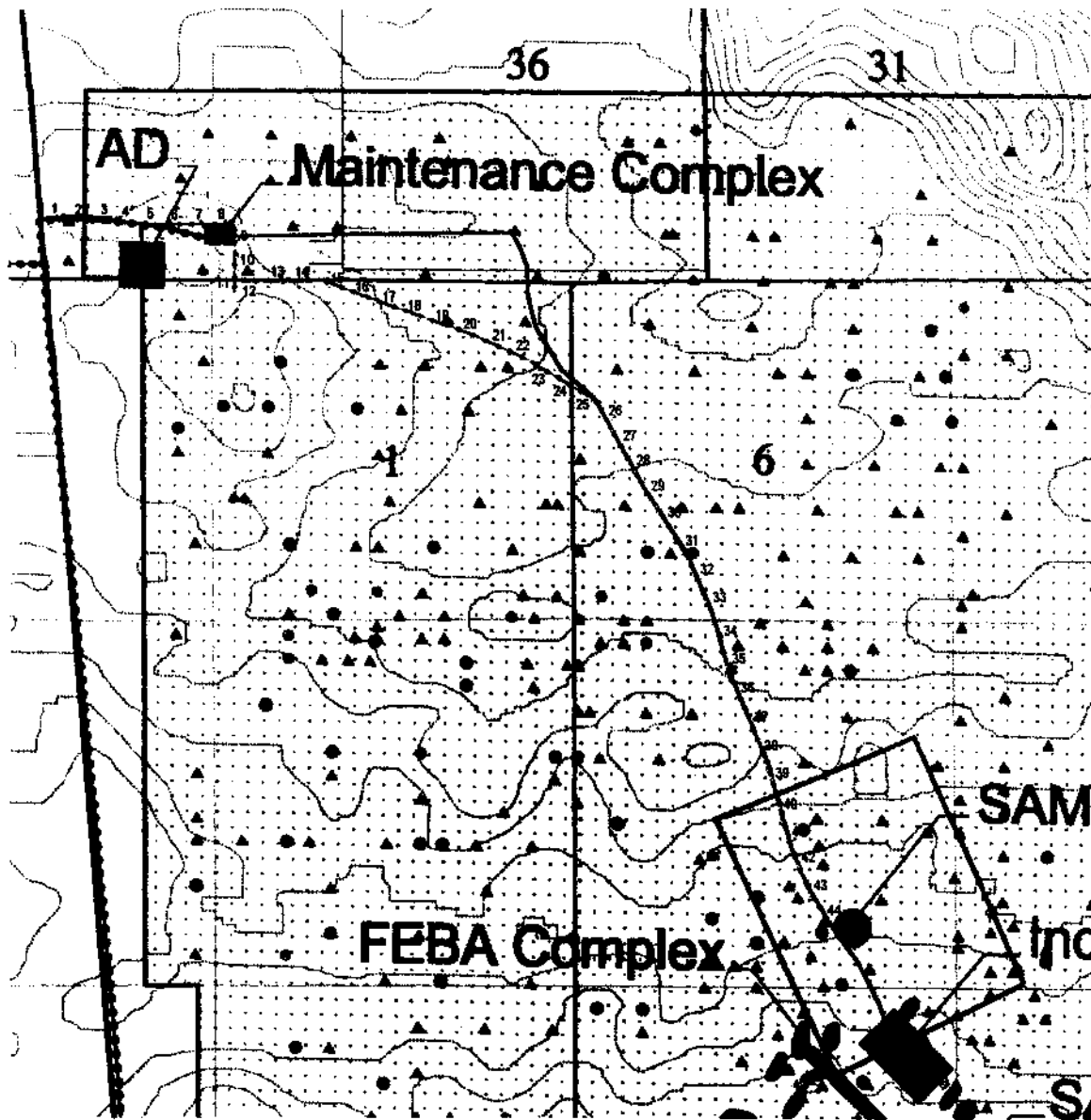
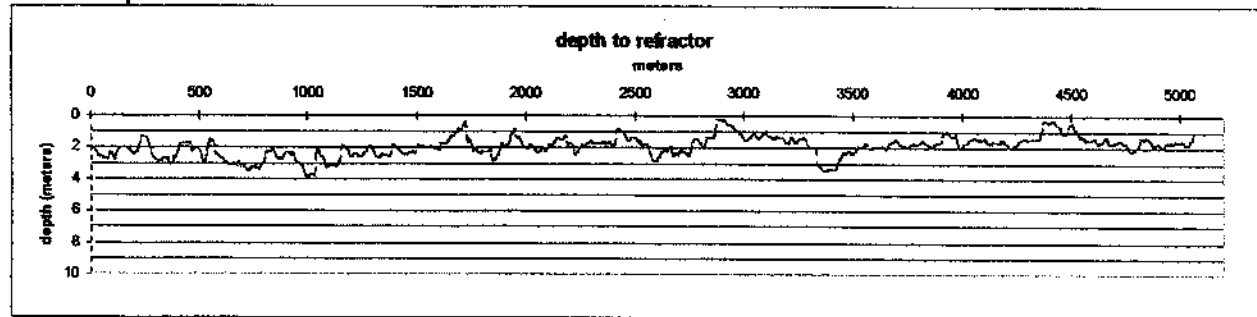


Figure 1. Seismic profile location map (locations shown are approximate)

## Rock Depth Profile



Appendix A contains each of the 44 individual profiles (spreads) collected. Each presentation shows the arrival time plots, observed velocities, and calculated depth for each spread.

Appendix B contains each of the raw field records.

## Discussion

In general the data quality are very good. Velocities and depths are close to those expected and correlate well with conditions found at the site and existing information. Of significant note are test pits that indicate the presence of a near surface well developed "hard pan" or caliche zone. Depending on the nature of zone, this layer may serve as the refracting horizon and obscure deeper (basalt) layers of similar or lower velocity.

*Table 1 - Summary of seismic velocities*

layer	average velocity	description
layer 1	350 mps	surface sediments; poorly consolidated soil and fine grained sediment or overburden,
layer 2	2000-3000 mps	basalt

Table #2 Rock Depth

spread	1	225	1.7	445	1.8	665	3.2	885	2.7	1105	3.1
0	2.0	230	1.5	450	1.8	670	3.2	890	2.5	1110	3.1
5	2.0	spread	3	455	1.7	675	3.0	895	2.4	1115	3.2
10	2.1	230	1.4	460	1.8	680	2.9	900	2.4	1120	3.2
15	2.1	235	1.3	spread	5	685	2.9	905	2.3	1125	3.3
20	2.2	240	1.3	460	2.0	690	3.1	910	2.4	1130	3.2
25	2.3	245	1.4	465	2.3	spread	7	915	2.4	1135	3.0
30	2.5	250	1.4	470	2.2	690	3.2	920	2.5	1140	2.9
35	2.6	255	1.3	475	2.1	695	3.3	spread	9	1145	2.9
40	2.6	260	1.4	480	2.1	700	3.2	920	2.5	1150	2.5
45	2.5	265	1.5	485	2.1	705	3.2	925	2.3	spread	11
50	2.6	270	1.9	490	2.1	710	3.2	930	2.3	1150	2.2
55	2.7	275	2.1	495	2.1	715	3.3	935	2.4	1155	1.8
60	2.7	280	2.4	500	2.2	720	3.4	940	2.8	1160	1.9
65	2.7	285	2.5	505	2.3	725	3.5	945	3.0	1165	2.0
70	2.7	290	2.7	510	2.6	730	3.5	950	3.0	1170	2.0
75	2.8	295	2.7	515	2.9	735	3.4	955	3.0	1175	2.0
80	2.7	300	2.7	520	2.9	740	3.3	960	3.0	1180	2.1
85	2.5	305	2.8	525	2.9	745	3.3	965	3.1	1185	2.3
90	2.3	310	2.9	530	2.6	750	3.3	970	3.1	1190	2.6
95	2.4	315	2.9	535	2.4	755	3.2	975	3.3	1195	2.6
100	2.4	320	2.9	540	2.1	760	3.2	980	3.5	1200	2.6
105	2.6	325	2.8	545	1.8	765	3.2	985	3.7	1205	2.5
110	2.8	330	2.7	550	1.6	770	3.3	990	3.9	1210	2.4
115	2.8	335	2.6	555	1.5	775	3.4	995	4.0	1215	2.4
spread	2	340	2.7	560	1.5	780	3.3	1000	4.0	1220	2.4
115	2.6	345	2.7	565	1.6	785	3.2	1005	3.9	1225	2.5
120	2.2	spread	4	570	1.7	790	3.0	1010	3.7	1230	2.6
125	2.1	345	2.7	575	2.0	795	2.9	1015	3.7	1235	2.6
130	2.1	350	2.7	spread	6	800	2.8	1020	3.7	1240	2.6
135	2.1	355	2.8	575	2.3	805	2.6	1025	3.7	1245	2.5
140	2.1	360	3.0	580	2.4	spread	8	1030	3.9	1250	2.4
145	2.0	365	3.1	585	2.5	805	2.5	1035	3.3	1255	2.4
150	2.0	370	3.0	590	2.5	810	2.3	spread	10	1260	2.3
155	2.0	375	2.8	595	2.7	815	2.3	1035	2.8	1265	2.2
160	2.0	380	2.6	600	2.7	820	2.3	1040	2.0	spread	12
165	2.1	385	2.6	605	2.7	825	2.3	1045	2.0	1265	2.1
170	2.1	390	2.7	610	2.8	830	2.2	1050	2.2	1270	1.9
175	2.2	395	2.6	615	2.9	835	2.1	1055	2.6	1275	1.9
180	2.1	400	2.3	620	2.9	840	2.1	1060	2.6	1280	1.9
185	2.3	405	2.0	625	2.9	845	2.2	1065	2.6	1285	2.0
190	2.4	410	1.8	630	3.0	850	2.2	1070	2.7	1290	2.1
195	2.5	415	1.7	635	3.2	855	2.5	1075	3.0	1295	2.2
200	2.4	420	1.8	640	3.2	860	2.7	1080	3.3	1300	2.4
205	2.3	425	1.7	645	3.2	865	2.8	1085	3.3	1305	2.5
210	2.1	430	1.7	650	3.0	870	2.7	1090	3.3	1310	2.6
215	1.9	435	1.8	655	3.0	875	2.7	1095	3.1	1315	2.6
220	1.9	440	1.8	660	3.0	880	2.7	1100	3.1	1320	2.7



1325	2.6	1550	2.0	1775	2.1	2000	2.0	2225	2.4	2450	1.1
1330	2.6	1555	2.0	1780	2.2	2005	2.1	2230	2.4	2455	1.3
1335	2.5	1560	1.9	1785	2.3	2010	2.0	2235	2.3	2460	1.3
1340	2.4	1565	1.9	1790	2.4	2015	1.9	2240	2.2	2465	1.6
1345	2.5	1570	2.0	1795	2.3	2020	1.8	2245	2.1	2470	1.6
1350	2.5	1575	2.1	1800	2.3	2025	1.9	2250	2.0	2475	1.6
1355	2.5	1580	2.1	1805	2.3	2030	2.0	2255	1.9	2480	1.4
1360	2.6	1585	2.1	1810	2.3	2035	2.1	2260	1.9	2485	1.3
1365	2.6	1590	2.1	1815	2.3	2040	2.2	2265	1.9	2490	1.4
1370	2.6	1595	2.2	1820	2.3	2045	2.3	2270	1.9	2495	1.3
1375	2.5	1600	2.2	1825	2.2	2050	2.3	2275	1.8	2500	1.4
1380	2.2	1605	2.0	1830	2.2	2055	2.3	2280	1.7	2505	1.5
spread	13	1610	1.9	1835	2.1	2060	2.2	2285	1.7	2510	1.6
1380	2.1	spread	15	1840	2.2	2065	2.2	2290	1.7	2515	1.7
1385	1.8	1610	1.8	spread	17	2070	2.1	2295	1.6	2520	1.6
1390	1.8	1615	1.7	1840	2.5	spread	19	2300	1.6	2525	1.5
1395	1.9	1620	1.7	1845	2.8	2070	2.0	spread	21	2530	1.6
1400	2.0	1625	1.7	1850	2.9	2075	2.0	2300	1.6	spread	23
1405	2.0	1630	1.8	1855	2.9	2080	2.0	2305	1.7	2530	1.8
1410	2.1	1635	1.7	1860	2.7	2085	2.1	2310	1.8	2535	1.9
1415	2.2	1640	1.6	1865	2.6	2090	2.2	2315	1.8	2540	1.9
1420	2.3	1645	1.6	1870	2.4	2095	2.1	2320	1.7	2545	1.8
1425	2.3	1650	1.5	1875	2.3	2100	2.0	2325	1.7	2550	1.8
1430	2.4	1655	1.4	1880	2.0	2105	1.9	2330	1.7	2555	1.8
1435	2.5	1660	1.3	1885	1.8	2110	1.8	2335	1.7	2560	1.8
1440	2.5	1665	1.2	1890	1.8	2115	1.8	2340	1.7	2565	2.1
1445	2.4	1670	1.2	1895	1.9	2120	1.8	2345	1.7	2570	2.4
1450	2.4	1675	1.1	1900	2.0	2125	1.8	2350	1.6	2575	2.6
1455	2.4	1680	1.0	1905	1.9	2130	1.6	2355	1.6	2580	2.8
1460	2.4	1685	0.9	1910	1.9	2135	1.5	2360	1.7	2585	2.8
1465	2.4	1690	0.9	1915	1.9	2140	1.4	2365	1.8	2590	2.9
1470	2.3	1695	0.9	1920	1.8	2145	1.4	2370	1.8	2595	2.9
1475	2.3	1700	0.9	1925	1.6	2150	1.5	2375	1.7	2600	2.8
1480	2.2	1705	0.7	1930	1.4	2155	1.5	2380	1.6	2605	2.8
1485	2.3	1710	0.6	1935	1.2	2160	1.5	2385	1.6	2610	2.6
1490	2.4	1715	0.5	1940	1.1	2165	1.5	2390	1.7	2615	2.5
1495	2.3	1720	0.4	1945	1.0	2170	1.4	2395	1.8	2620	2.4
spread	14	1725	0.8	1950	0.8	2175	1.3	2400	1.8	2625	2.3
1495	2.1	spread	16	1955	1.0	2180	1.2	2405	1.8	2630	2.2
1500	1.8	1725	1.3	spread	18	2185	1.4	2410	1.8	2635	2.2
1505	1.8	1730	1.7	1955	1.3	spread	20	2415	1.4	2640	2.2
1510	1.9	1735	1.6	1960	1.5	2185	1.6	spread	22	2645	2.2
1515	1.9	1740	1.5	1965	1.4	2190	1.8	2415	1.1	spread	24
1520	1.9	1745	1.7	1970	1.4	2195	1.8	2420	0.9	2645	2.3
1525	1.9	1750	1.9	1975	1.6	2200	1.7	2425	0.9	2650	2.1
1530	2.0	1755	2.2	1980	1.8	2205	1.8	2430	0.9	2655	2.0
1535	2.0	1760	2.2	1985	1.9	2210	1.9	2435	0.9	2660	1.9
1540	2.0	1765	2.2	1990	2.0	2215	2.1	2440	1.0	2665	2.0
1545	2.0	1770	2.0	1995	2.0	2220	2.3	2445	1.1	2670	2.3

2675	2.5	2900	0.3	3125	1.3	3350	3.1	3575	2.1	3800	1.7
2680	2.6	2905	0.3	3130	1.5	3355	3.3	3580	2.1	3805	1.7
2685	2.4	2910	0.3	3135	1.5	3360	3.4	3585	2.1	3810	1.7
2690	2.3	2915	0.3	3140	1.5	3365	3.4	3590	2.0	3815	1.6
2695	2.4	2920	0.5	3145	1.4	3370	3.5	3595	1.9	3820	1.6
2700	2.4	2925	0.6	3150	1.4	3375	3.6	3600	1.9	3825	1.6
2705	2.3	2930	0.6	3155	1.2	3380	3.5	3605	2.0	3830	1.8
2710	2.2	2935	0.6	3160	1.3	3385	3.5	3610	2.0	3835	1.8
2715	2.1	2940	0.6	3165	1.3	3390	3.4	3615	2.0	3840	1.8
2720	2.2	2945	0.6	3170	1.4	3395	3.4	3620	2.0	3845	1.8
2725	2.3	2950	0.7	3175	1.4	3400	3.3	3625	2.0	3850	1.9
2730	2.3	2955	0.8	3180	1.4	3405	3.4	3630	1.9	3855	2.0
2735	2.3	2960	0.9	3185	1.5	3410	3.4	3635	1.9	3860	1.9
2740	2.4	2965	0.9	3190	1.6	3415	3.4	3640	1.9	3865	1.9
2745	2.5	2970	1.0	3195	1.7	3420	3.3	3645	2.0	3870	1.8
2750	2.5	2975	1.1	3200	1.7	3425	3.1	3650	2.1	3875	1.8
2755	2.3	2980	1.2	3205	1.7	3430	2.9	3655	2.1	3880	1.7
2760	1.9	2985	1.2	3210	1.6	3435	2.7	3660	1.9	3885	1.7
spread	25	2990	1.2	3215	1.4	3440	2.7	3665	1.7	3890	1.7
2760	1.7	spread	27	3220	1.3	3445	2.6	3670	1.7	3895	1.7
2765	1.6	2990	1.2	spread	29	3450	2.6	3675	1.7	3900	1.7
2770	1.5	2995	1.3	3220	1.3	spread	31	3680	1.6	3905	1.7
2775	1.4	3000	1.4	3225	1.4	3450	2.5	spread	33	3910	1.5
2780	1.5	3005	1.5	3230	1.6	3455	2.4	3680	1.6	spread	35
2785	1.5	3010	1.6	3235	1.7	3460	2.3	3685	1.6	3910	1.3
2790	1.6	3015	1.5	3240	1.7	3465	2.3	3690	1.6	3915	1.0
2795	1.6	3020	1.5	3245	1.6	3470	2.4	3695	1.5	3920	1.1
2800	1.8	3025	1.4	3250	1.5	3475	2.3	3700	1.5	3925	1.0
2805	1.9	3030	1.3	3255	1.4	3480	2.2	3705	1.6	3930	1.0
2810	2.0	3035	1.2	3260	1.5	3485	2.2	3710	1.7	3935	1.0
2815	2.0	3040	1.2	3265	1.4	3490	2.3	3715	1.8	3940	1.1
2820	1.8	3045	1.1	3270	1.4	3495	2.4	3720	1.8	3945	1.2
2825	1.6	3050	1.1	3275	1.4	3500	2.4	3725	1.9	3950	1.3
2830	1.4	3055	1.3	3280	1.5	3505	2.3	3730	1.8	3955	1.4
2835	1.3	3060	1.4	3285	1.6	3510	2.3	3735	1.9	3960	1.3
2840	1.3	3065	1.5	3290	1.7	3515	2.1	3740	2.0	3965	1.2
2845	1.4	3070	1.4	3295	1.8	3520	2.0	3745	2.0	3970	1.2
2850	1.4	3075	1.3	3300	1.9	3525	1.9	3750	2.0	3975	1.5
2855	1.4	3080	1.3	3305	2.0	3530	2.0	3755	1.9	3980	1.8
2860	1.3	3085	1.2	3310	2.0	3535	2.0	3760	1.9	3985	2.0
2865	1.3	3090	1.1	3315	2.0	3540	2.1	3765	1.8	3990	2.1
2870	1.1	3095	1.0	3320	2.0	3545	1.9	3770	1.8	3995	2.0
2875	0.6	3100	0.9	3325	2.0	3550	1.8	3775	1.7	4000	1.9
spread	26	3105	1.1	3330	2.0	3555	1.7	3780	1.8	4005	1.8
2875	0.2	spread	28	3335	2.5	3560	1.7	3785	1.8	4010	1.8
2880	0.1	3105	1.2	spread	30	3565	1.8	3790	1.8	4015	1.7
2885	0.2	3110	1.3	3335	2.9	spread	32	3795	1.8	4020	1.7
2890	0.3	3115	1.3	3340	3.2	3565	2.0	spread	34	4025	1.6
2895	0.3	3120	1.3	3345	3.1	3570	2.1	3795	1.8	spread	36

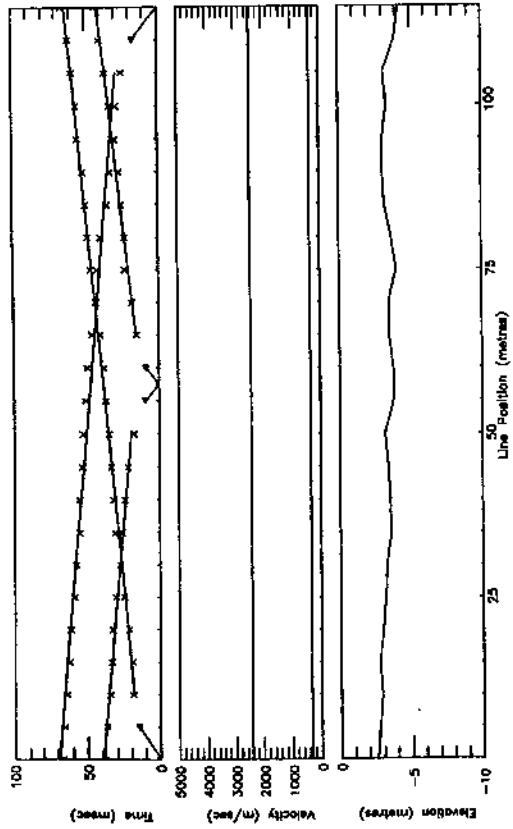
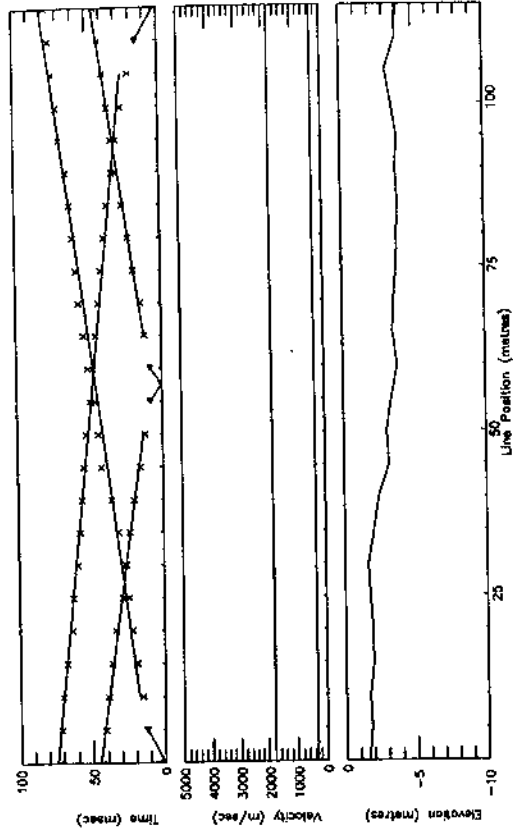
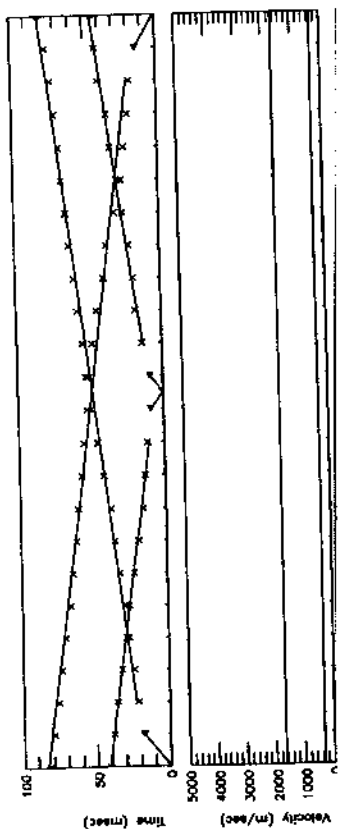
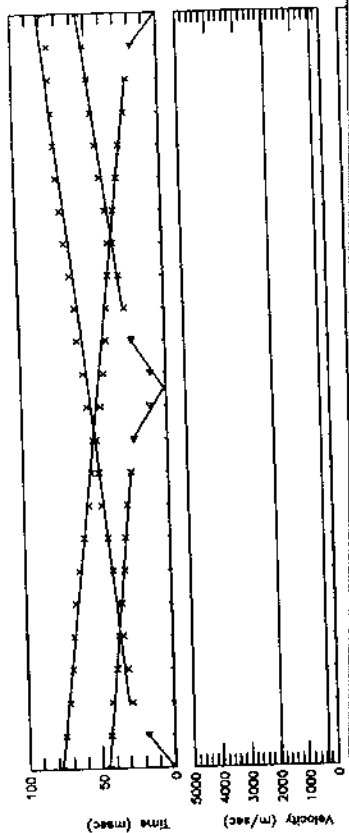
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4030	1.5	4215	2.0	4390	0.3	4575	1.5	4750	1.7	4935	1.7
4035	1.5	4220	2.0	4395	0.3	4580	1.5	4755	1.8	4940	1.6
4040	1.5	4225	2.0	4400	0.4	4585	1.5	4760	2.0	4945	1.7
4045	1.4	4230	2.0	4405	0.3	4590	1.5	4765	2.1	<b>spread</b>	44
4050	1.3	4235	1.9	4410	0.3	4595	1.5	4770	2.2	4945	1.7
4055	1.3	4240	1.8	4415	0.2	4600	1.5	4775	2.2	4950	1.7
4060	1.4	4245	1.8	4420	0.2	<b>spread</b>	41	4780	2.2	4955	1.6
4065	1.5	4250	1.8	4425	0.3	4600	1.5	4785	2.1	4960	1.6
4070	1.5	4255	1.7	4430	0.5	4605	1.4	4790	2.0	4965	1.7
4075	1.5	<b>spread</b>	38	4435	0.6	4610	1.4	4795	2.1	4970	1.7
4080	1.5	4255	1.6	4440	0.6	4615	1.5	4800	2.0	4975	1.7
4085	1.5	4260	1.6	4445	0.6	4620	1.7	4805	1.9	4980	1.6
4090	1.5	4265	1.5	4450	0.8	4625	1.7	4810	1.7	4985	1.5
4095	1.5	4270	1.4	4455	1.0	4630	1.7	4815	1.4	4990	1.5
4100	1.4	4275	1.5	4460	1.1	4635	1.6	4820	1.4	4995	1.6
4105	1.4	4280	1.4	4465	1.1	4640	1.6	4825	1.4	5000	1.6
4110	1.5	4285	1.4	4470	1.1	4645	1.5	4830	1.4	5005	1.5
4115	1.7	4290	1.5	4475	1.1	4650	1.4	<b>spread</b>	43	5010	1.5
4120	1.8	4295	1.5	4480	1.1	4655	1.3	4830	1.5	5015	1.6
4125	1.8	4300	1.5	4485	0.9	4660	1.3	4835	1.4	5020	1.7
4130	1.7	4305	1.5	<b>spread</b>	40	4665	1.4	4840	1.3	5025	1.8
4135	1.6	4310	1.5	4485	0.7	4670	1.4	4845	1.3	5030	1.8
4140	1.6	4315	1.5	4490	0.5	4675	1.6	4850	1.3	5035	1.8
<b>spread</b>	37	4320	1.5	4495	0.5	4680	1.7	4855	1.4	5040	1.7
4140	1.6	4325	1.5	4500	0.4	4685	1.8	4860	1.5	5045	1.5
4145	1.6	4330	1.5	4505	0.4	4690	1.7	4865	1.6	5050	1.5
4150	1.6	4335	1.5	4510	0.6	4695	1.7	4870	1.7	5055	1.5
4155	1.6	4340	1.5	4515	0.7	4700	1.6	4875	1.8	5060	1.0
4160	1.7	4345	1.5	4520	0.8	4705	1.7	4880	1.9		
4165	1.7	4350	1.5	4525	0.9	4710	1.7	4885	1.9		
4170	1.7	4355	1.3	4530	1.0	4715	1.6	4890	1.8		
4175	1.6	4360	1.1	4535	1.1	<b>spread</b>	42	4895	1.7		
4180	1.4	4365	1.0	4540	1.2	4715	1.6	4900	1.6		
4185	1.5	4370	0.7	4545	1.3	4720	1.5	4905	1.8		
4190	1.7	<b>spread</b>	39	4550	1.3	4725	1.6	4910	1.9		
4195	1.8	4370	0.4	4555	1.3	4730	1.5	4915	2.0		
4200	1.8	4375	0.2	4560	1.4	4735	1.6	4920	2.0		
4205	1.8	4380	0.3	4565	1.5	4740	1.7	4925	1.9		

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# **Appendix A**

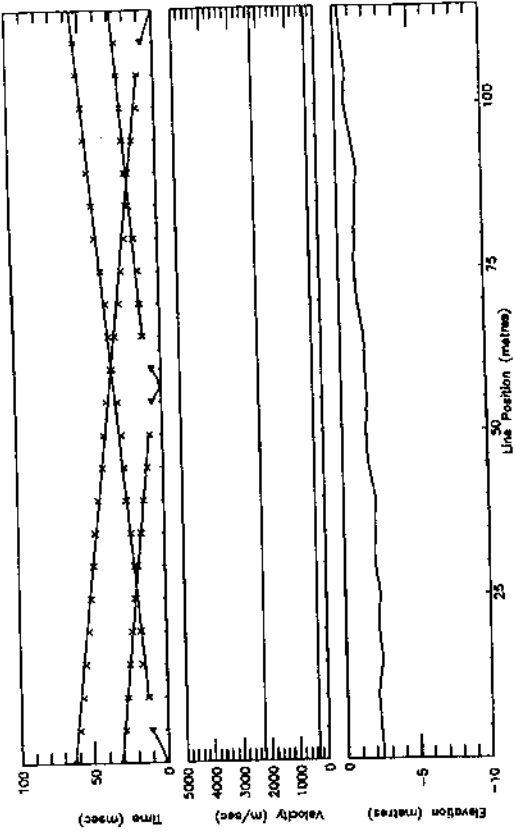
## **Individual Seismic Profiles**

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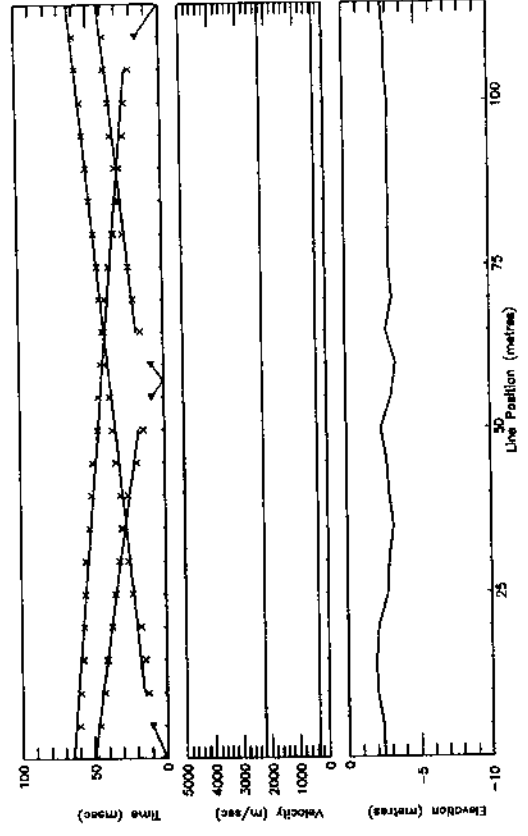


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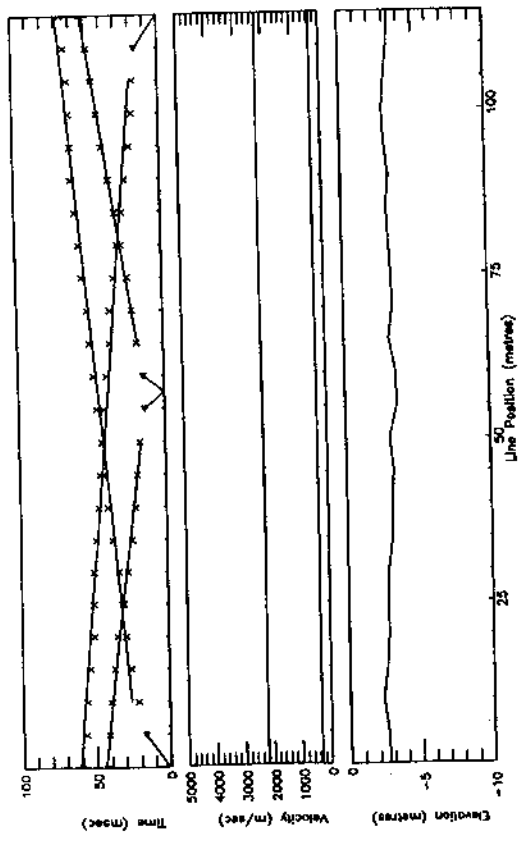
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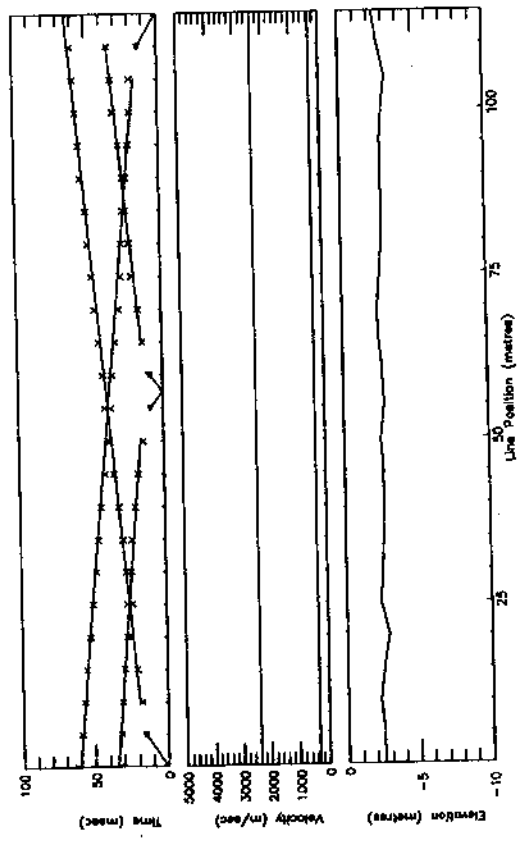
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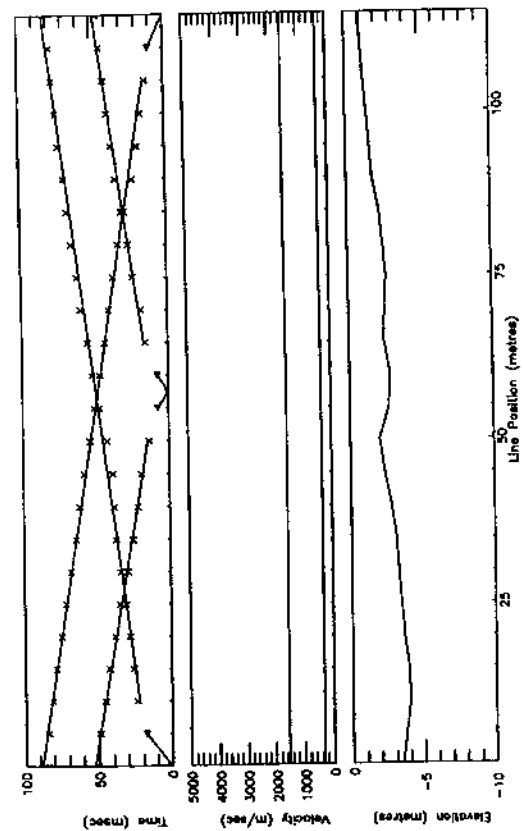


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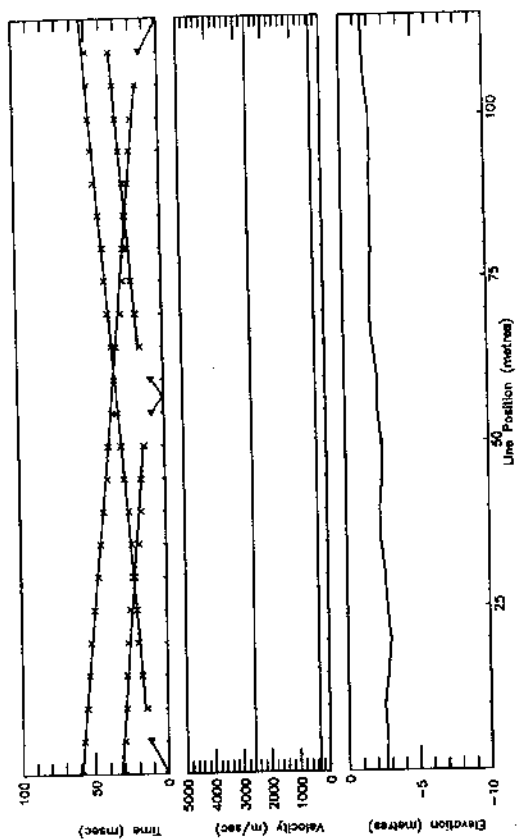


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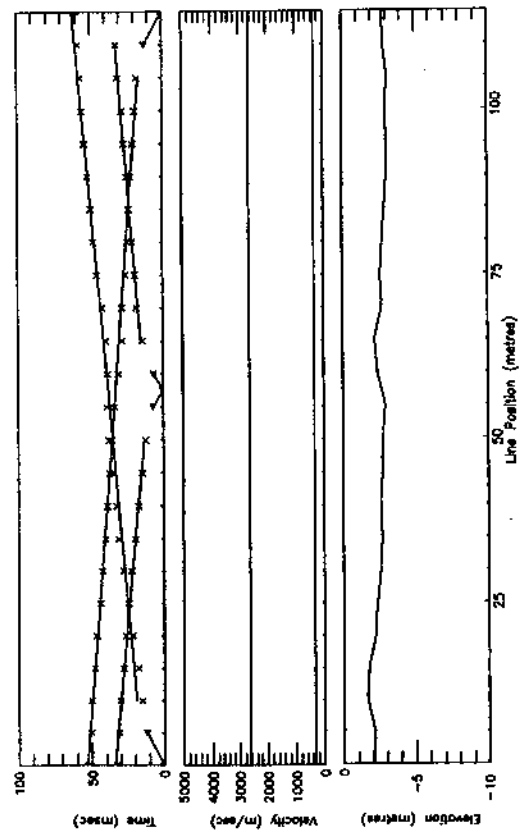




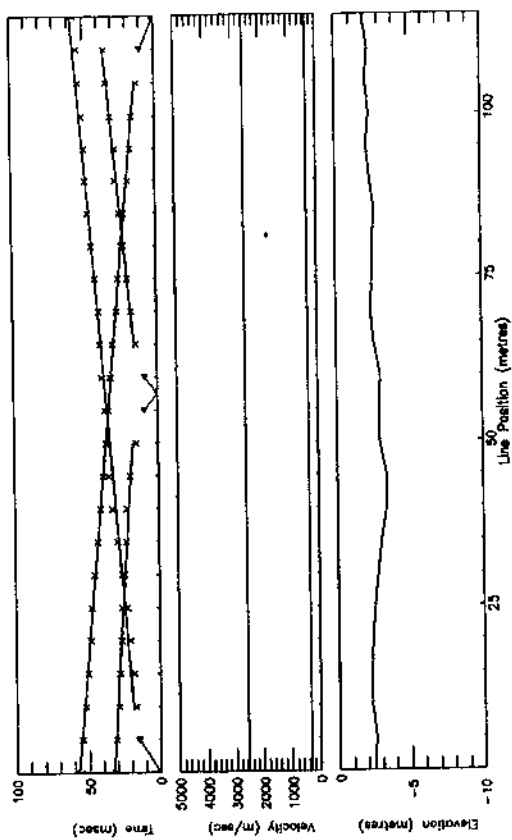
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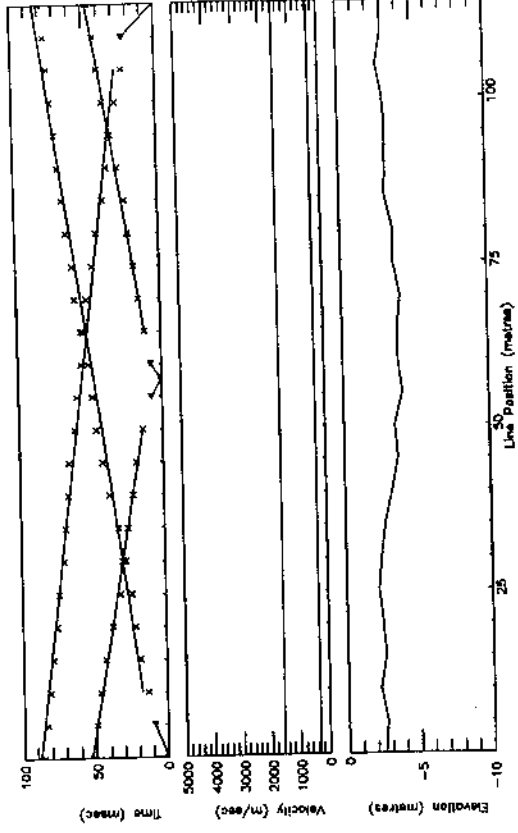
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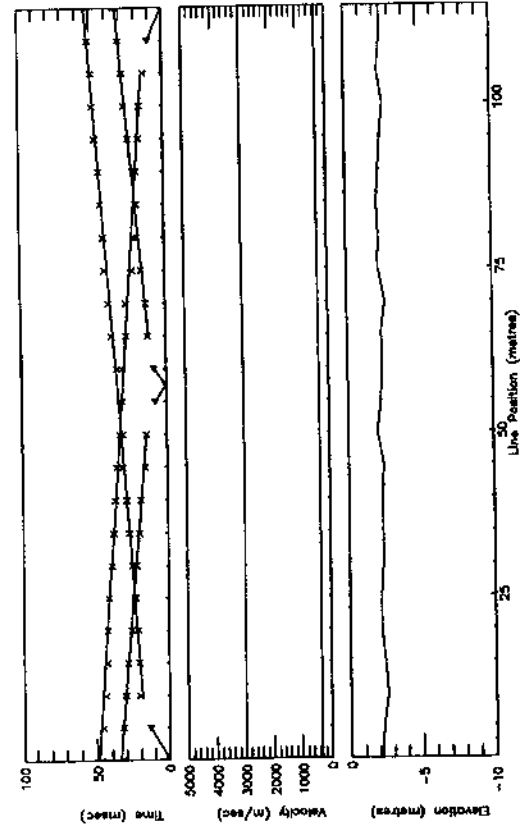
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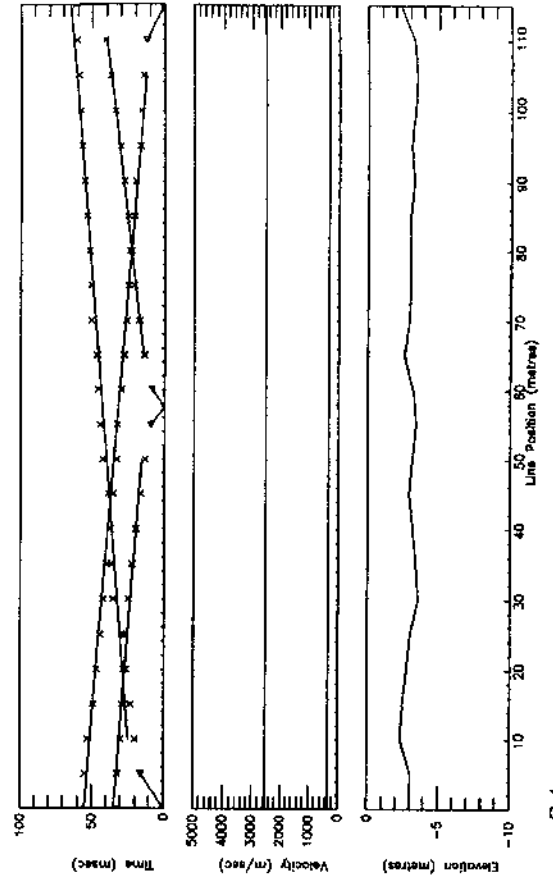
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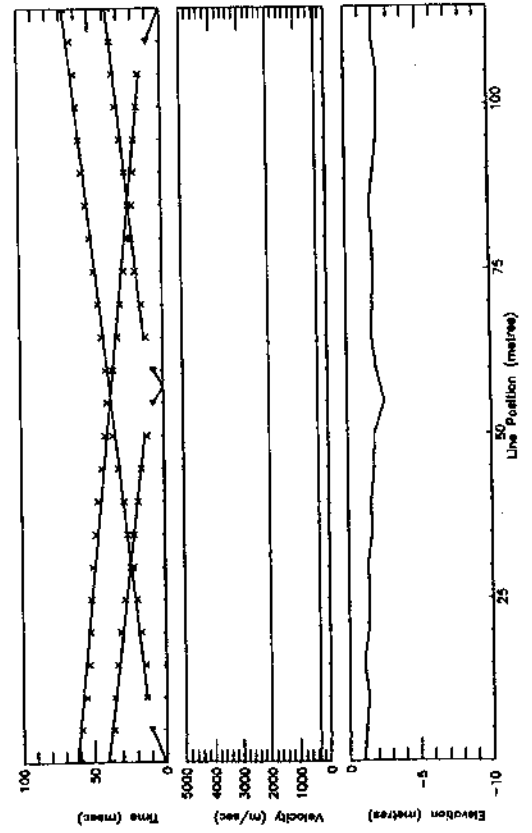
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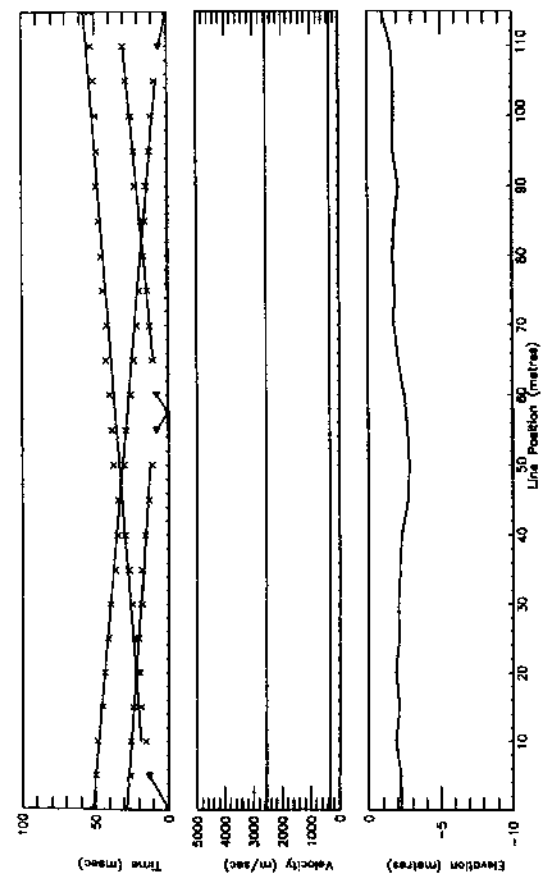
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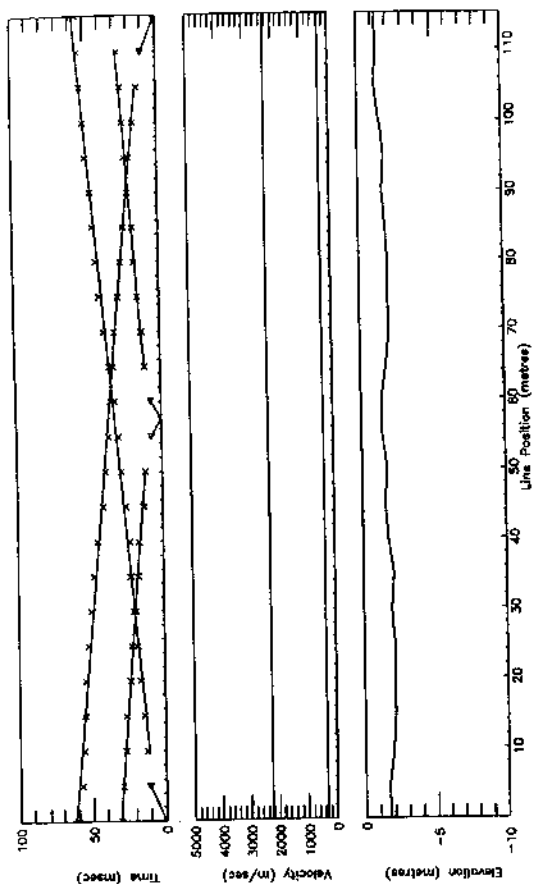


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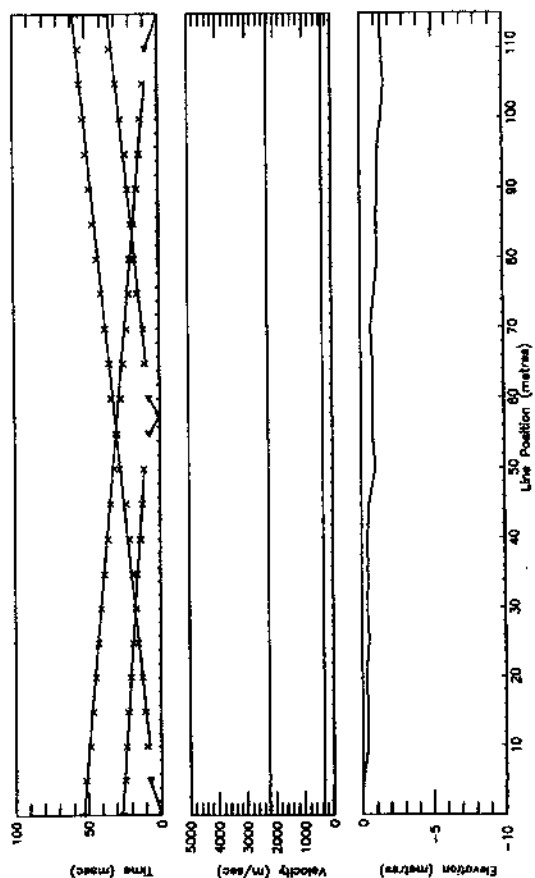
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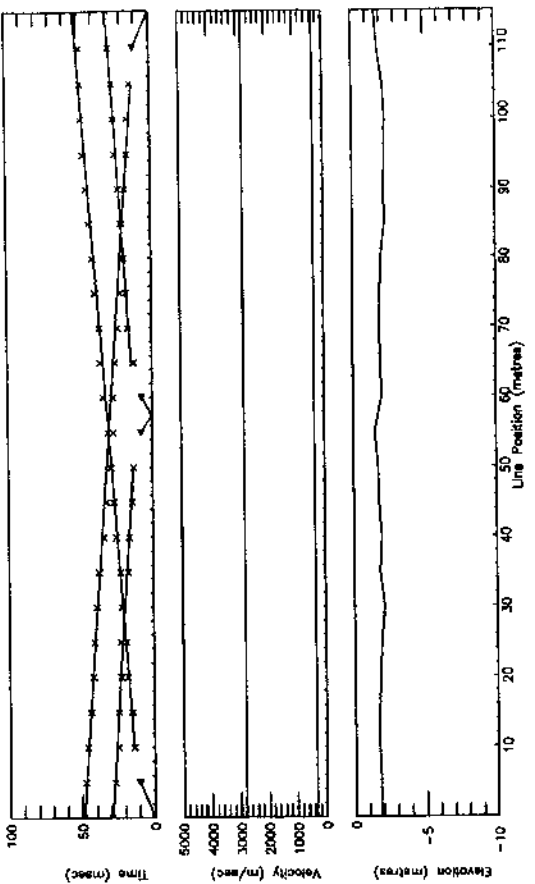


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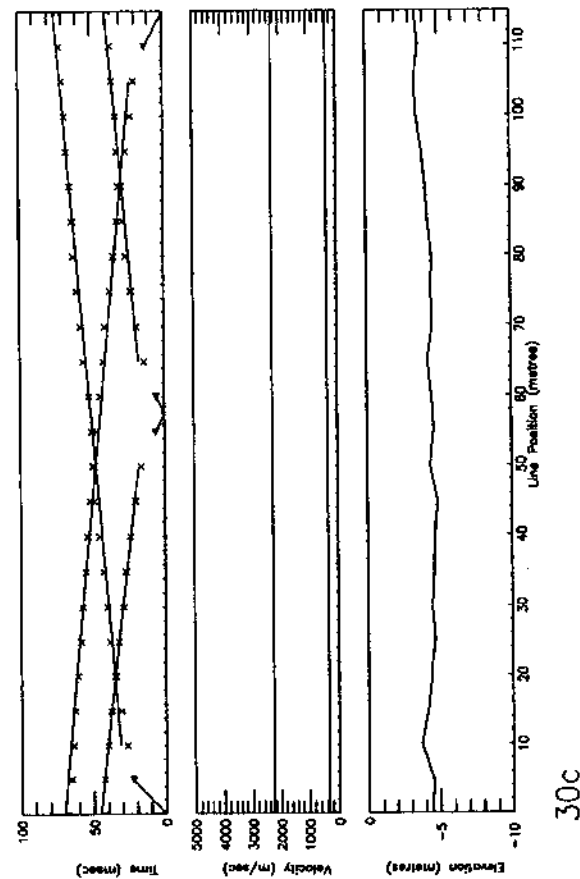
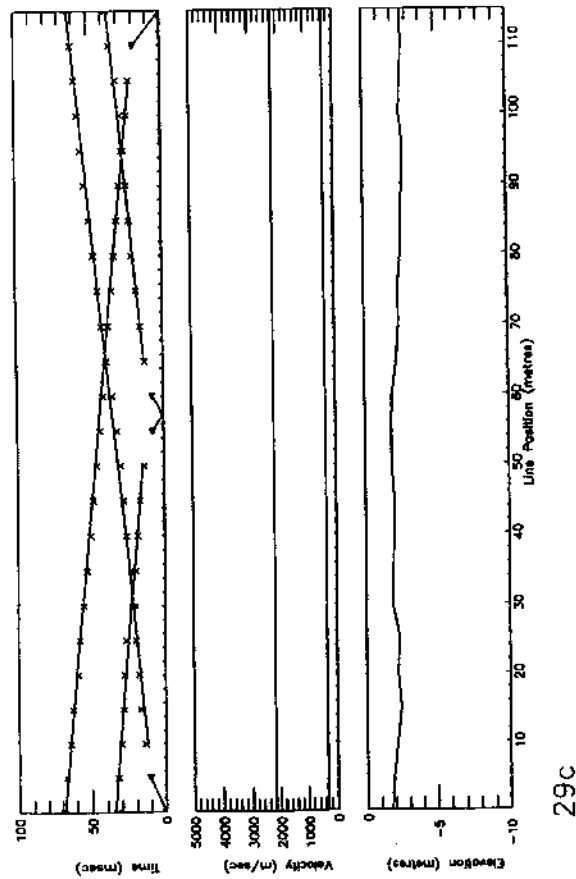
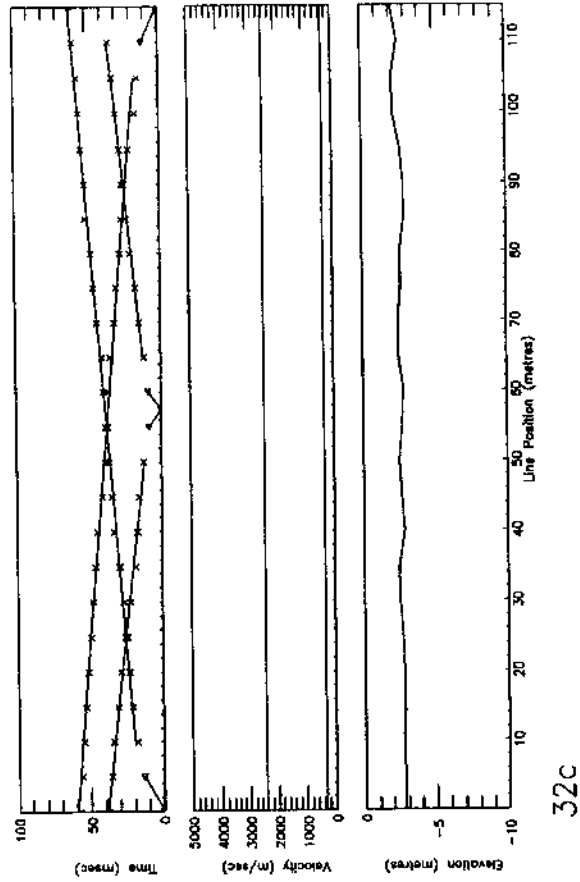
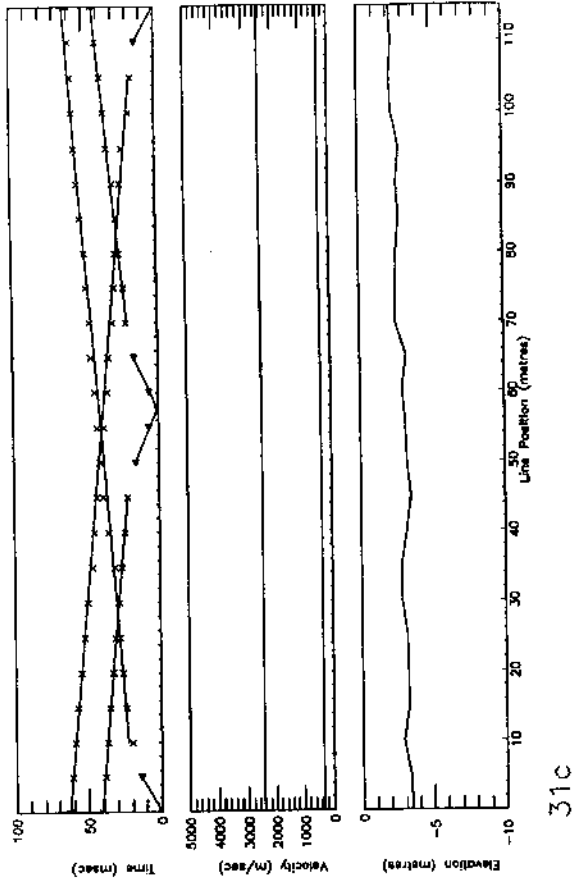
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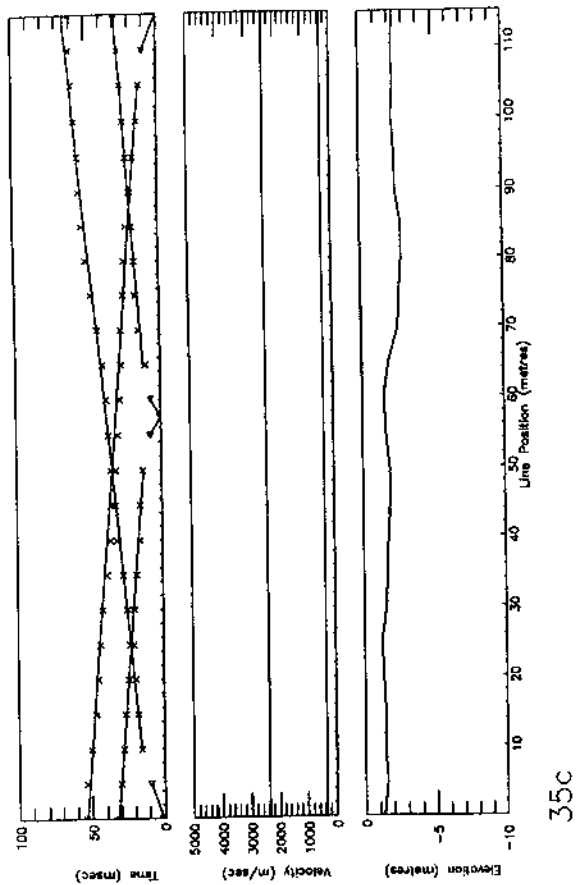


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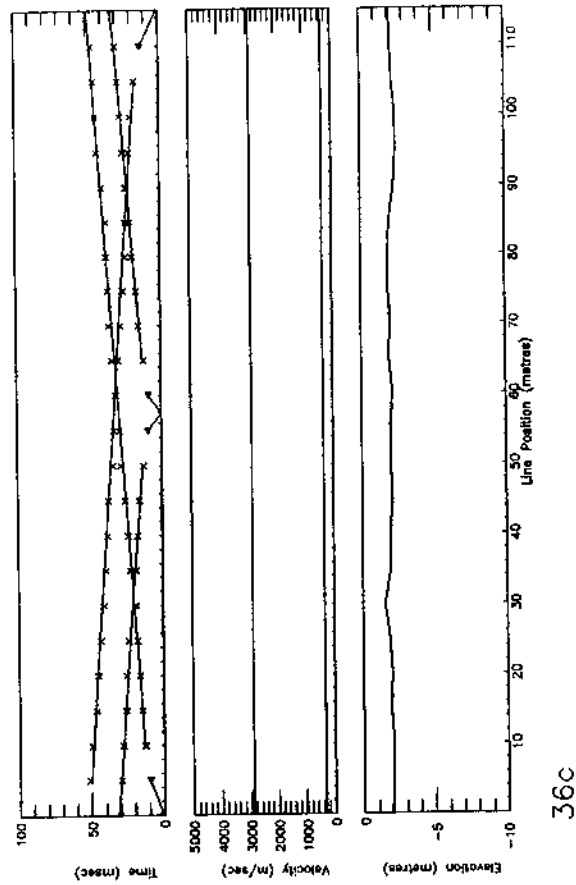


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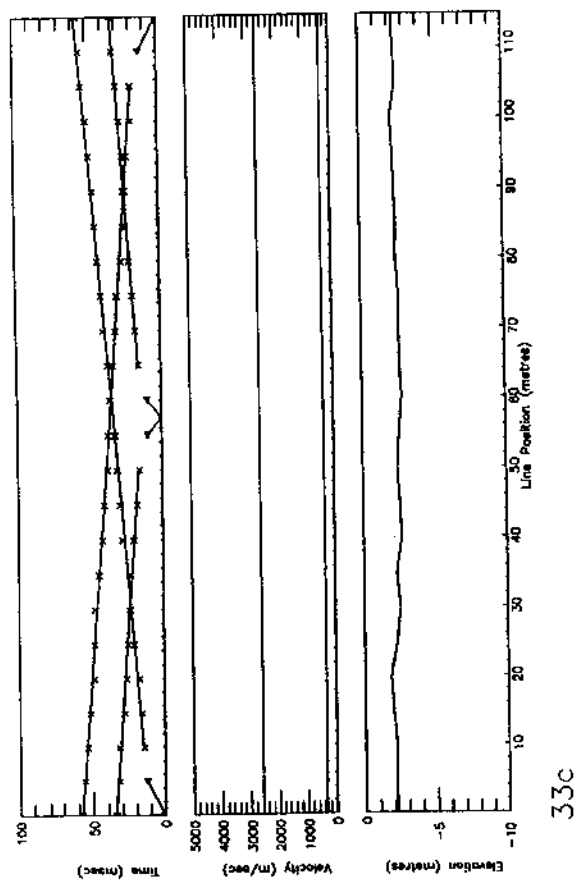




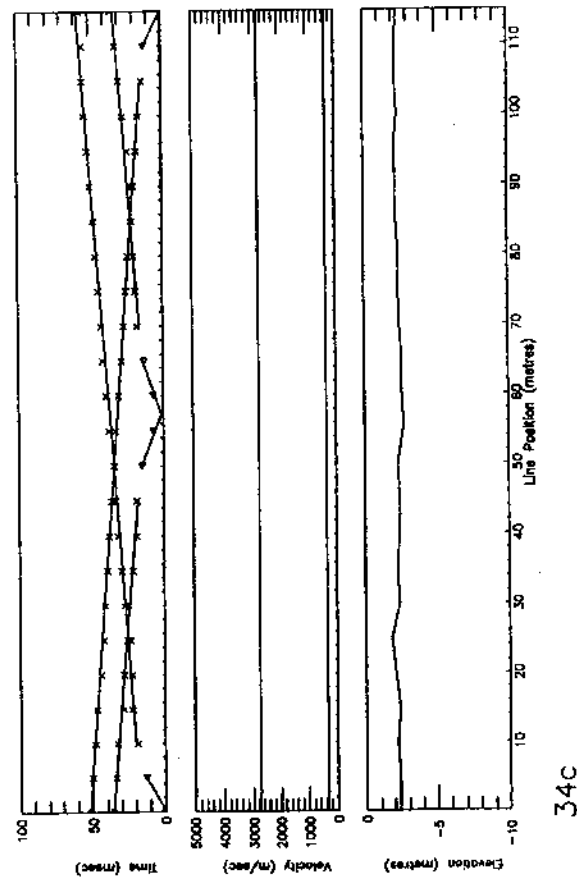
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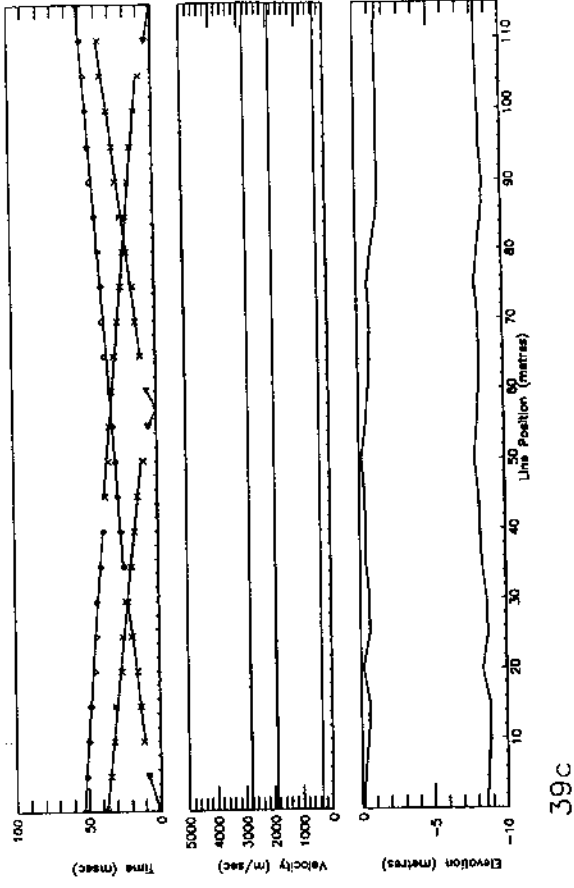
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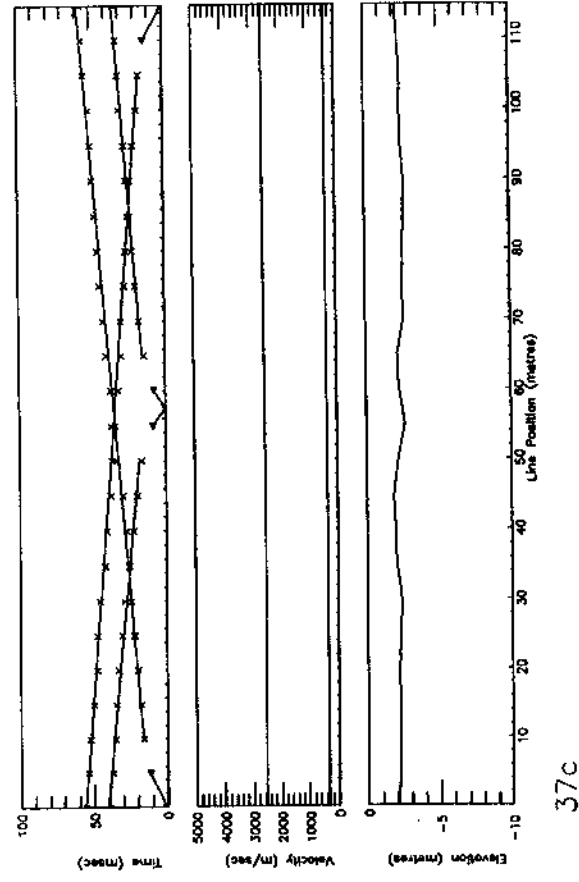
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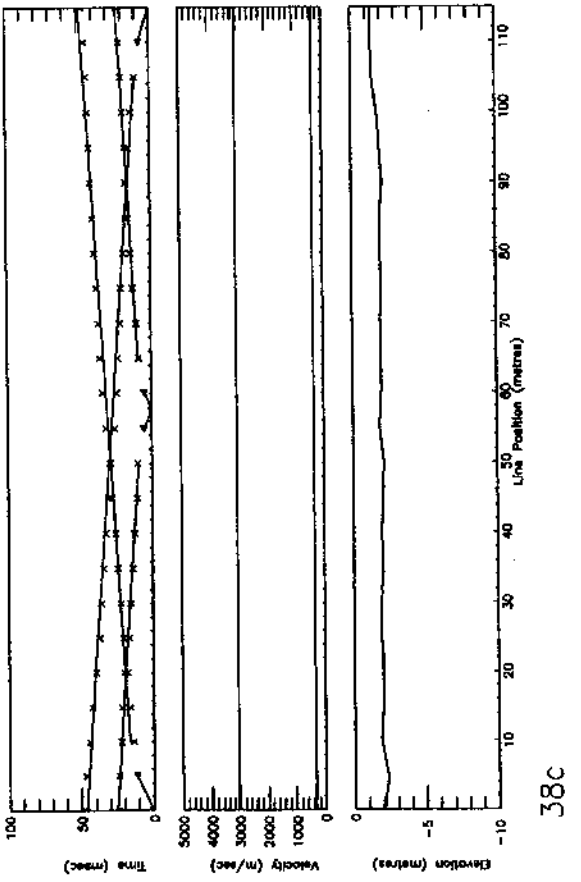
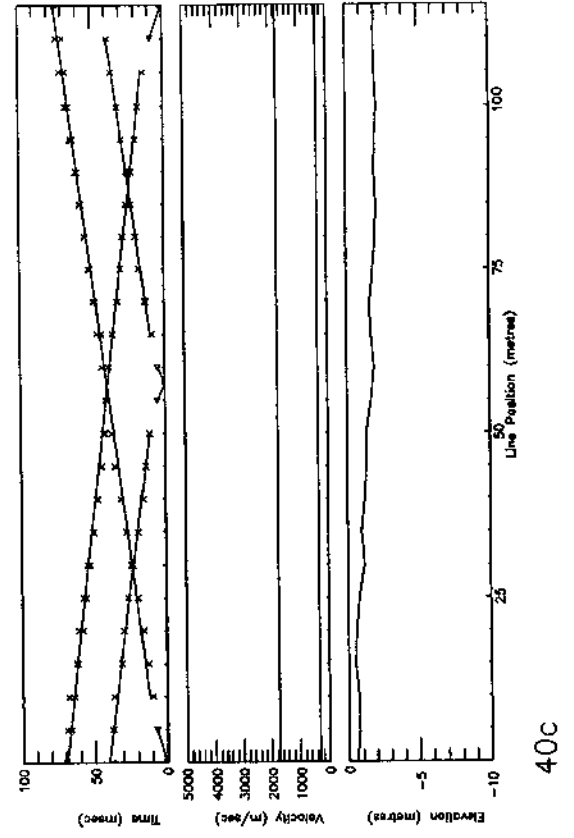
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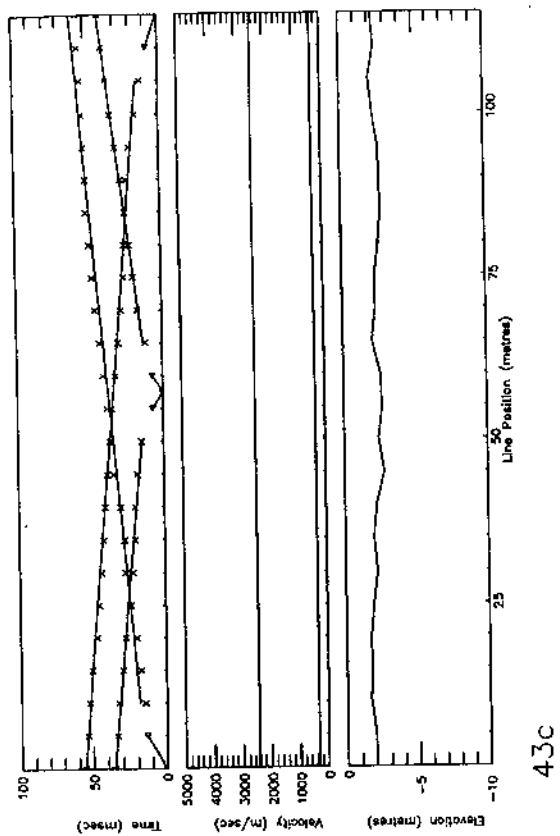


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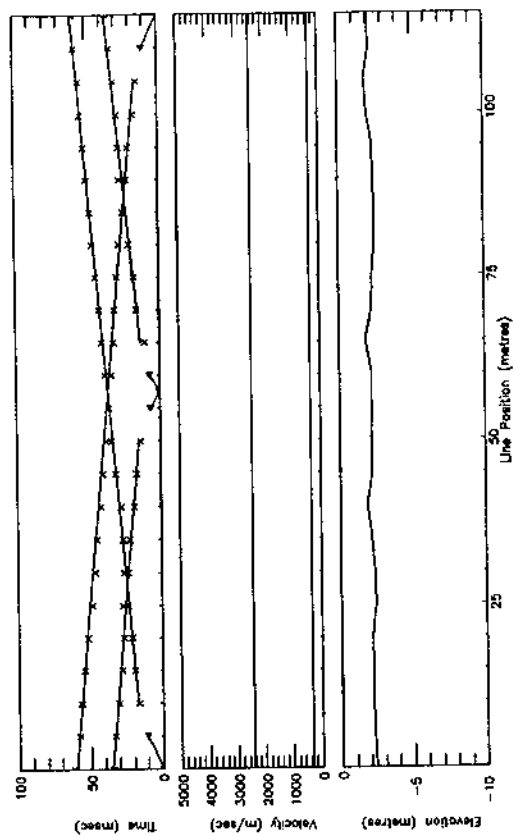


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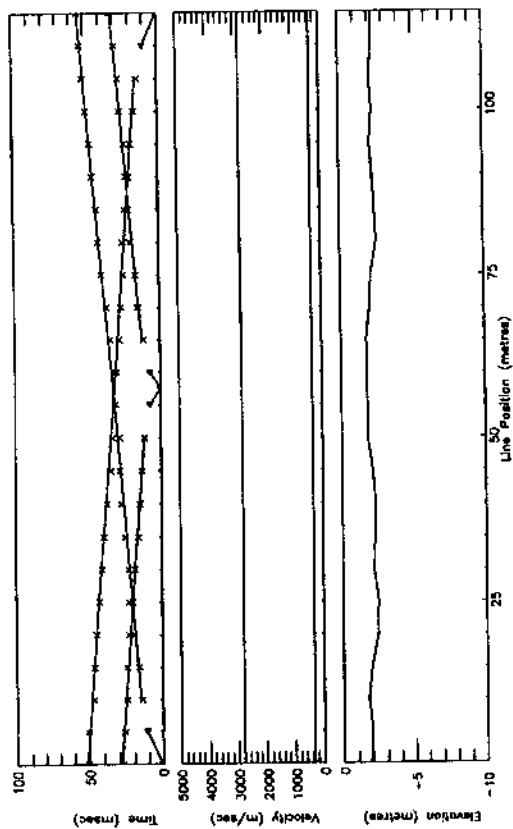




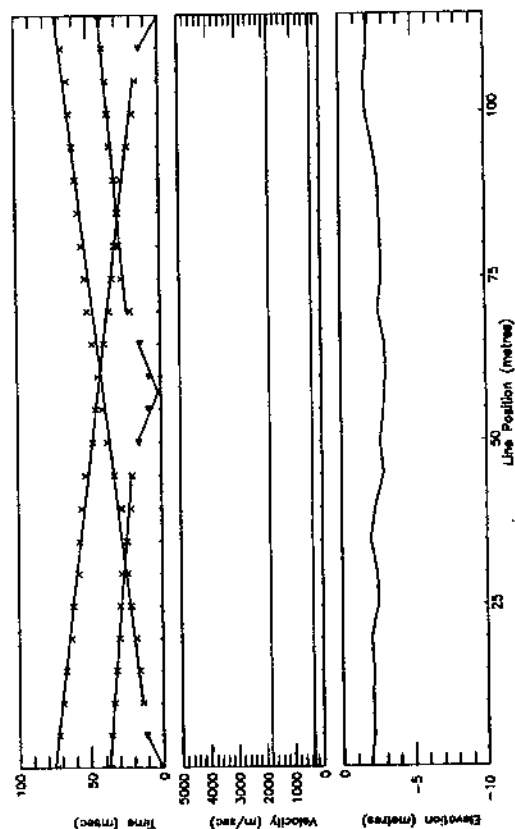
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44c



41c



42c

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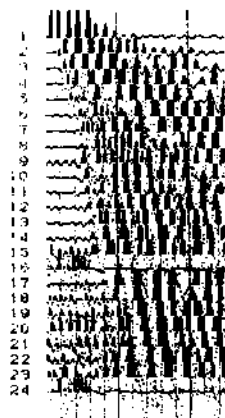
# **Appendix B**

## **Field Records**

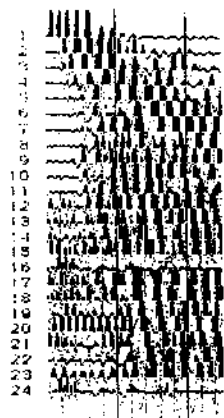
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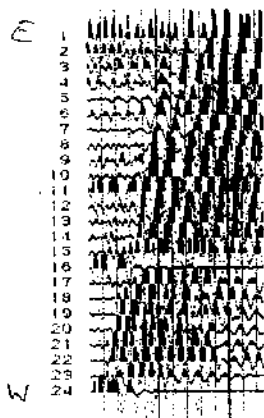
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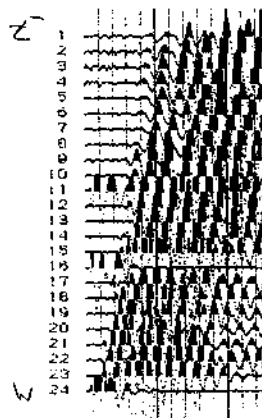
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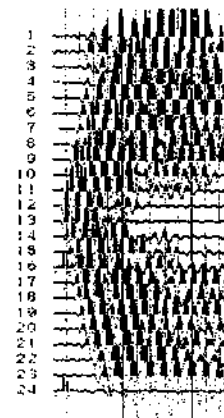
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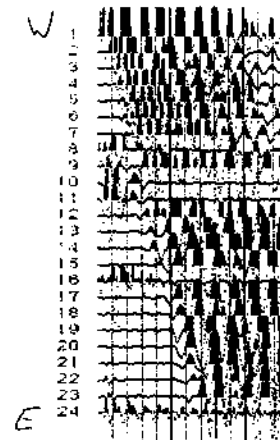
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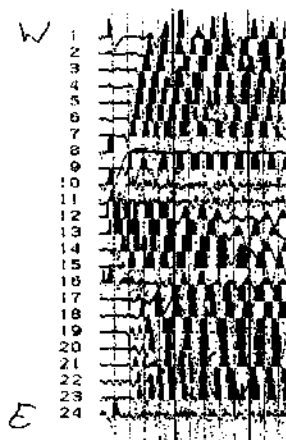
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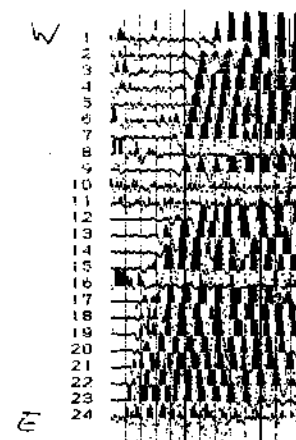
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W



E

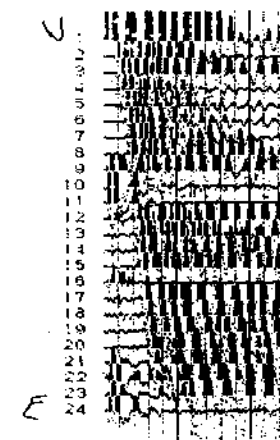


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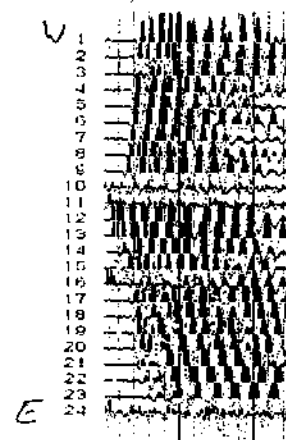
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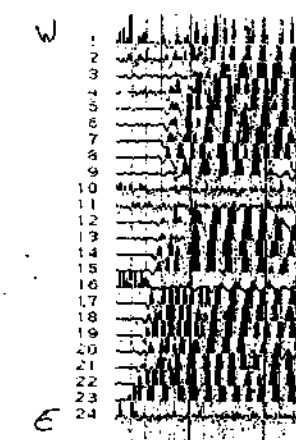
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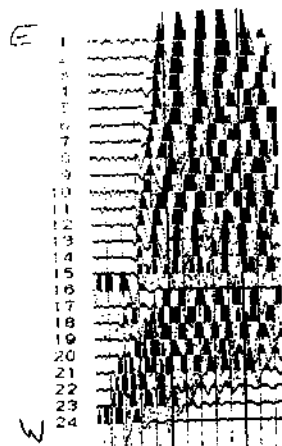
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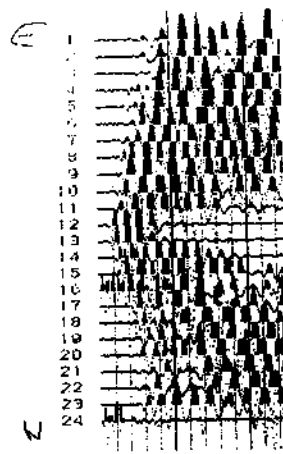
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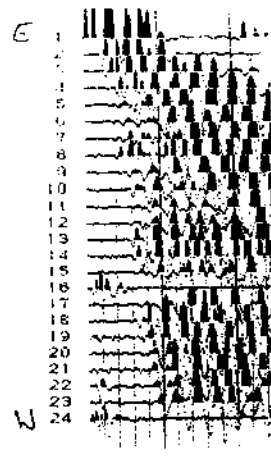
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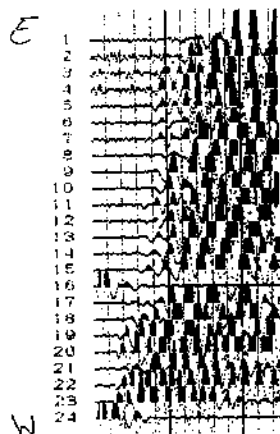
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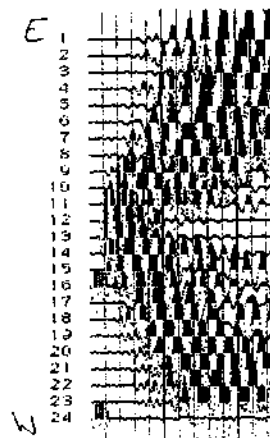
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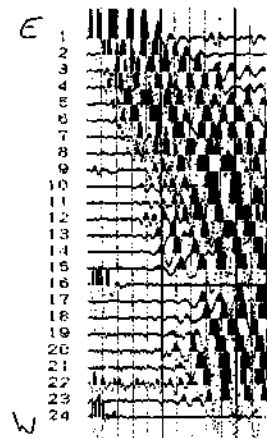
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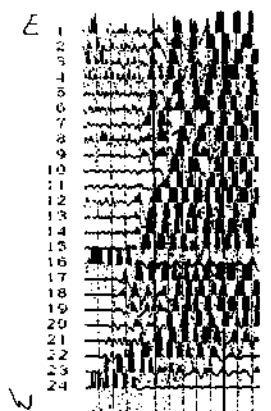
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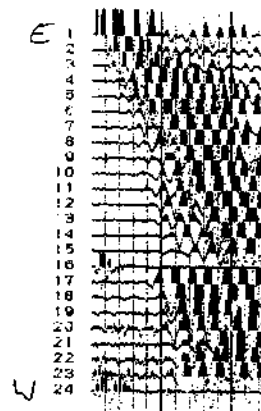
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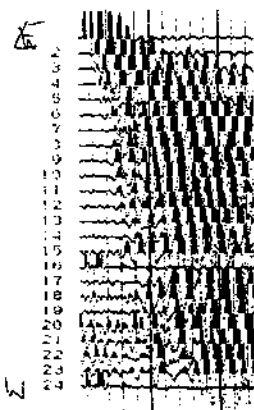
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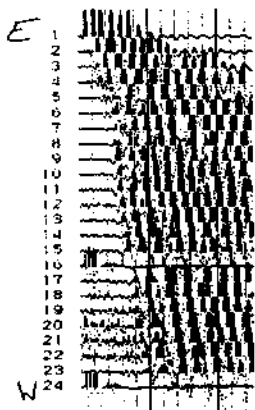
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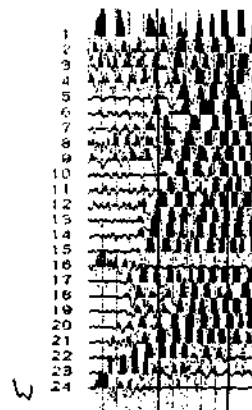
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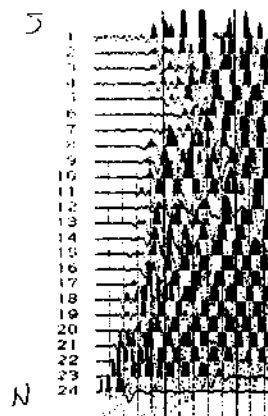
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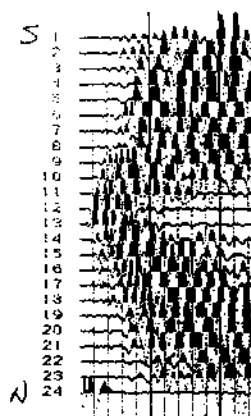
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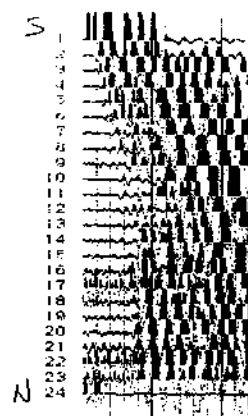
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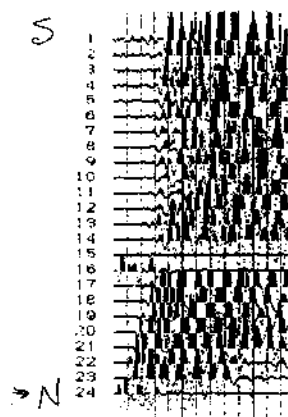
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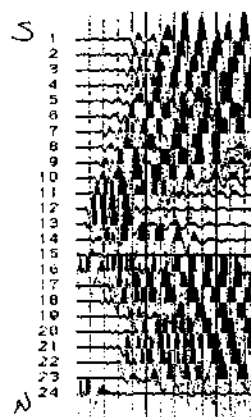
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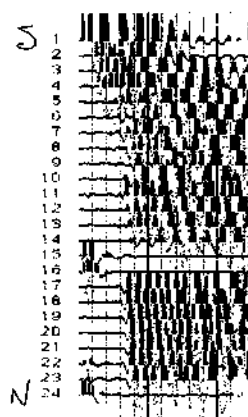
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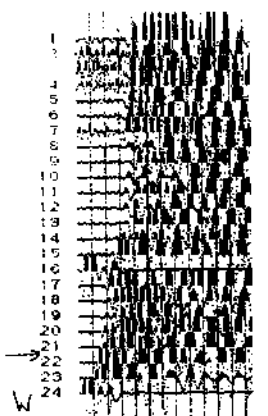
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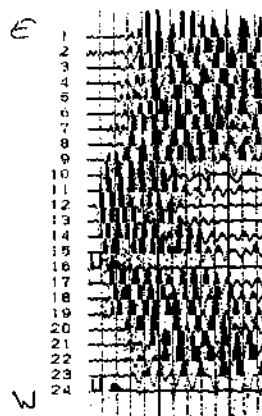
#38



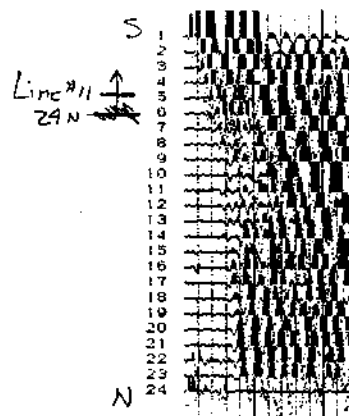
#52



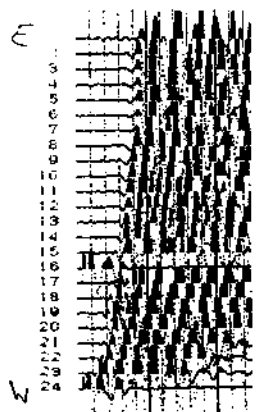
Line #8 K29



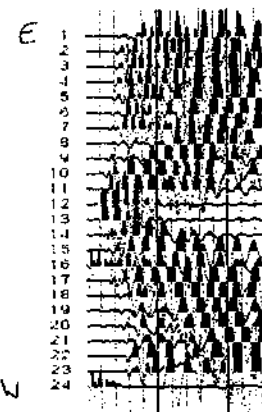
#30



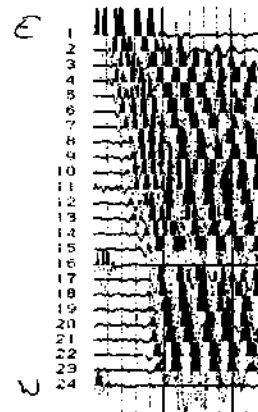
#59



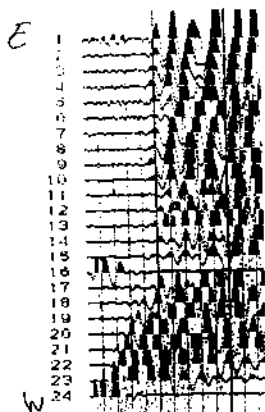
Line #7 K26



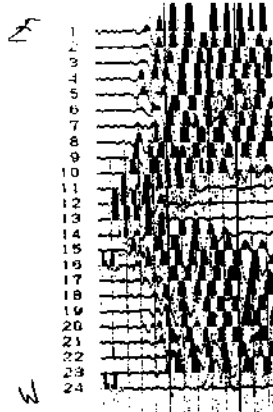
#27



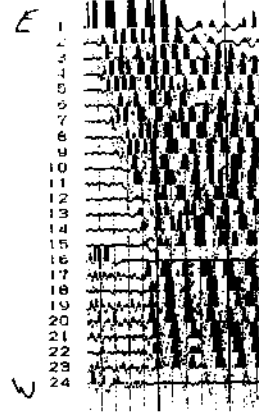
K28



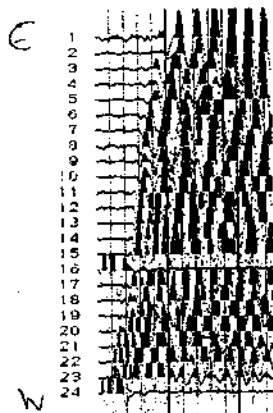
LINE #13 #48



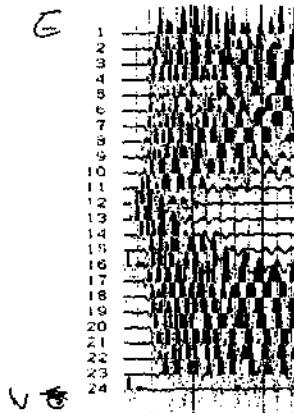
#49



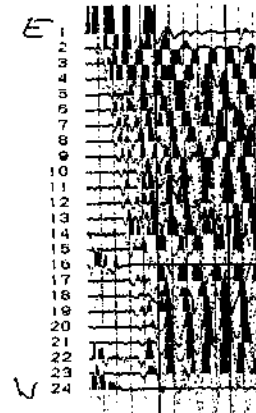
#50



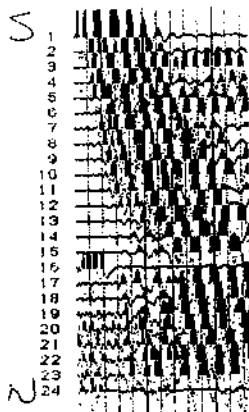
LINE #12 #44



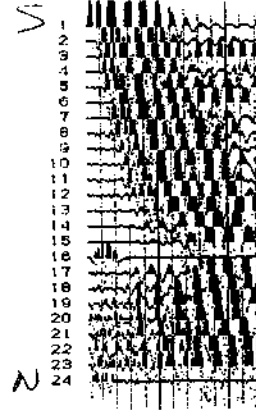
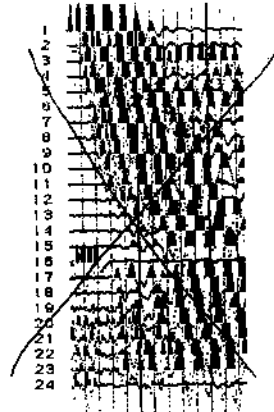
#45



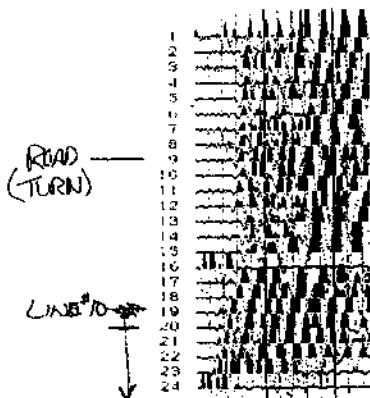
#47



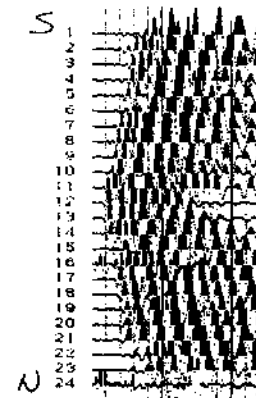
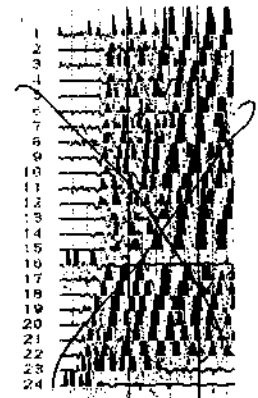
#42



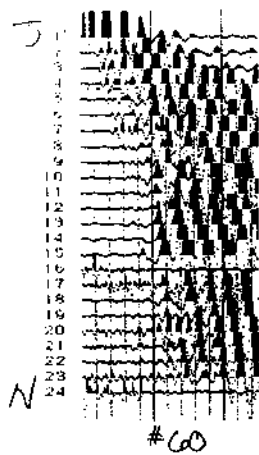
# 43 (REPEAT)



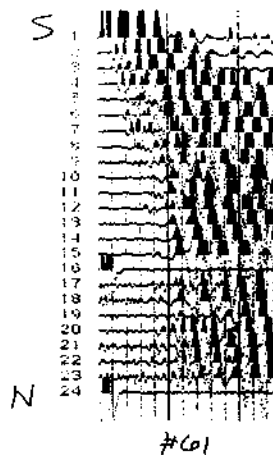
LINE #11 #40



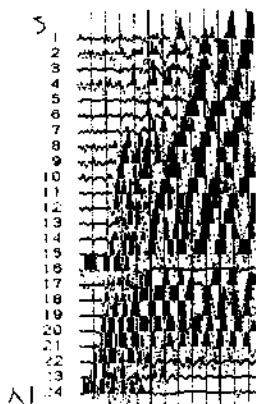
#41



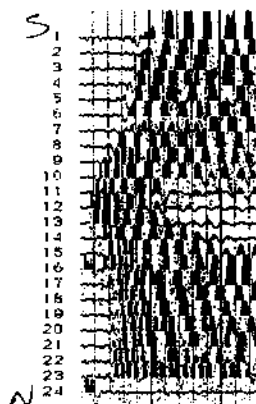
#60



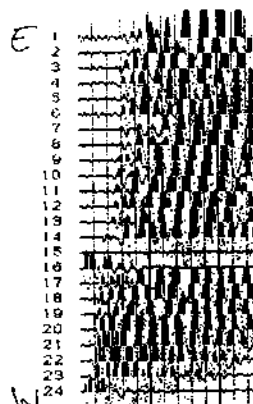
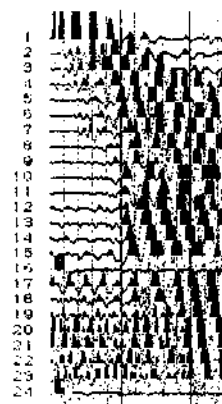
#61



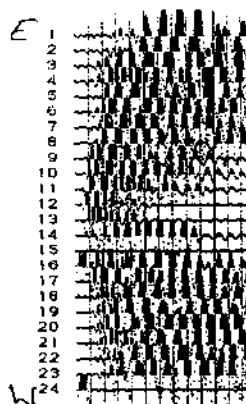
Line #11 #62



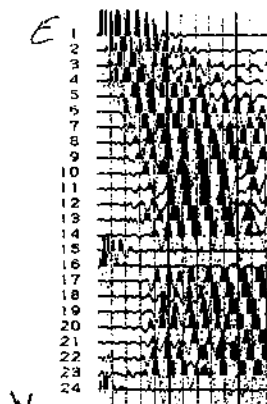
#63



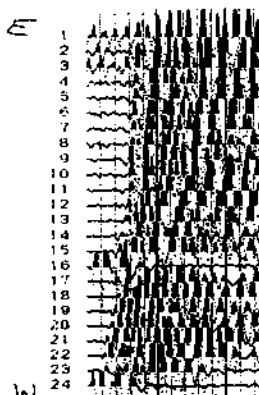
LINE #15 #54



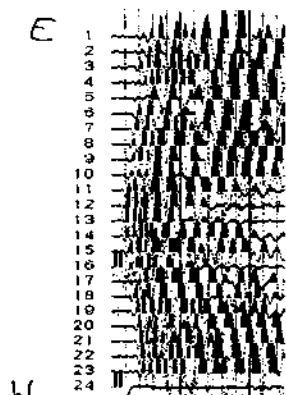
#55



#56



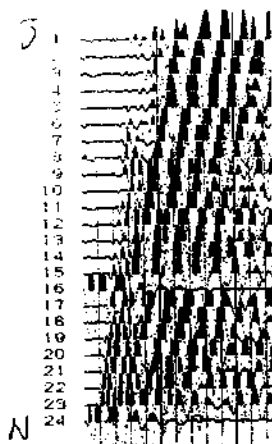
LINE #14 #51



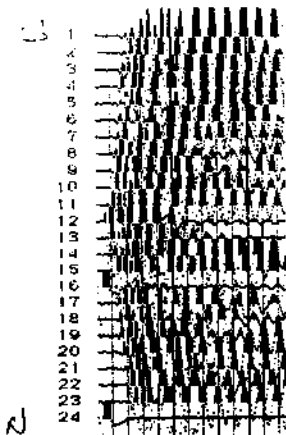
#52



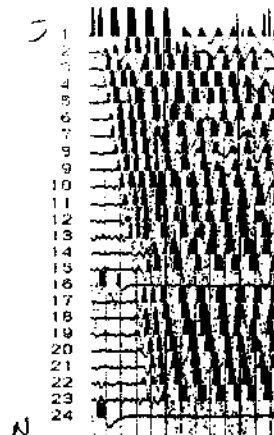
#53



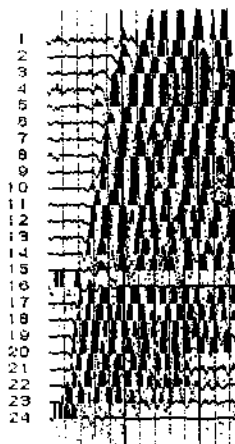
LINE #19 #69



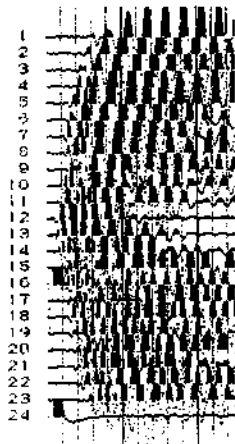
LINE #70



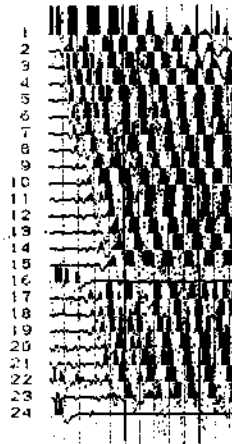
LINE #71



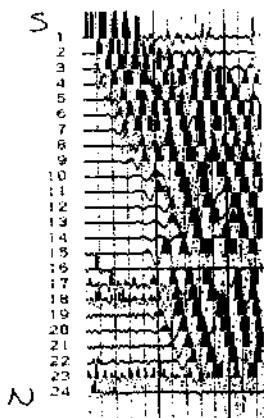
LINE #10 100



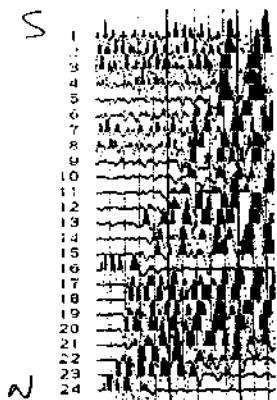
LINE #67



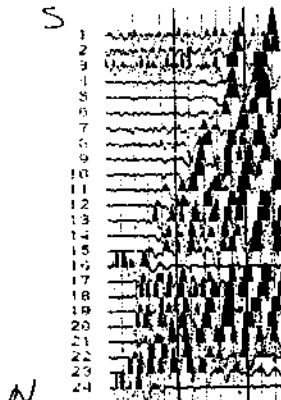
LINE #100



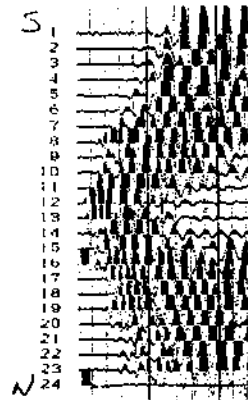
LINE #65



LINE #62

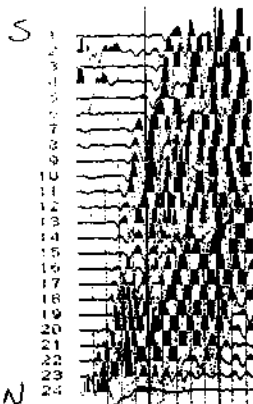


LINE #63

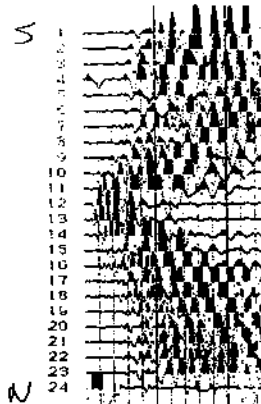


LINE #64

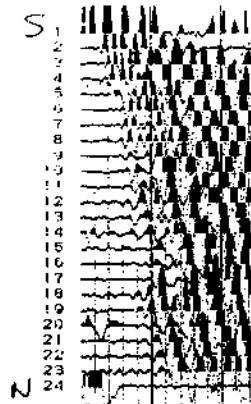




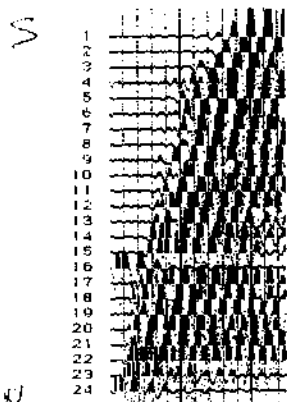
Line #23 #83



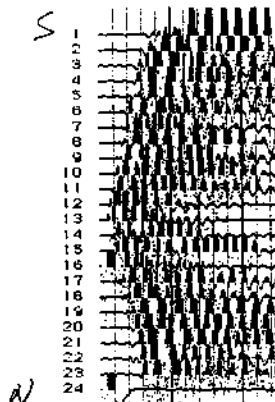
#84



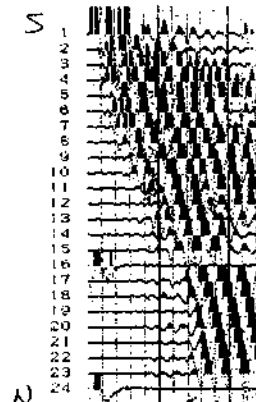
#85



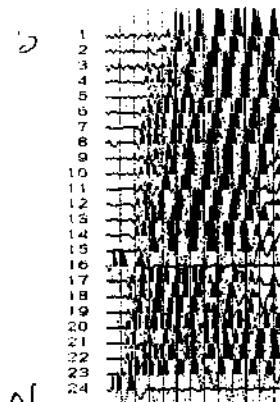
Line #77 #79



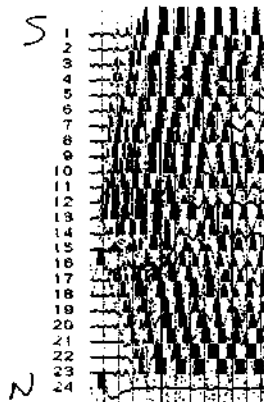
#80



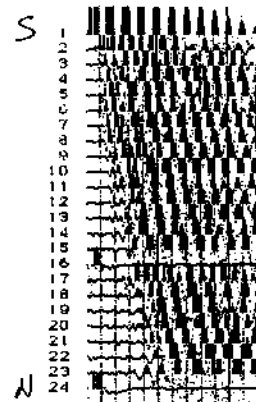
#81



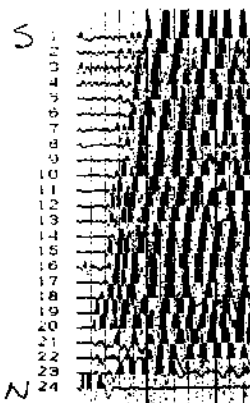
Line #21 #75



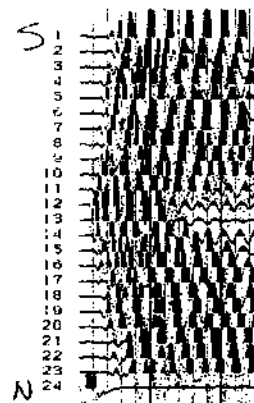
#76



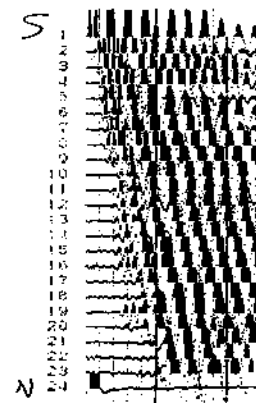
#78



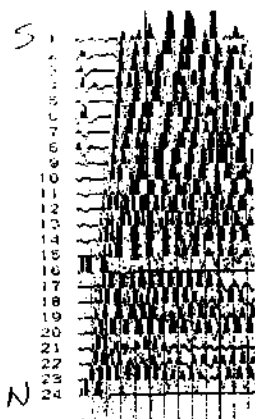
Line #20 #72



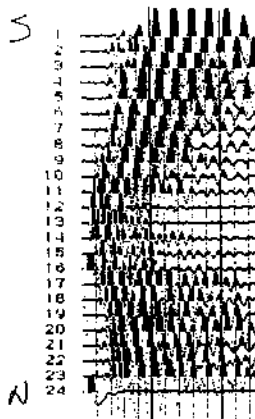
#73



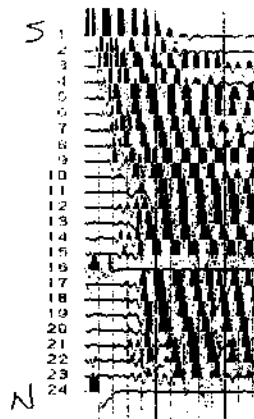
#74



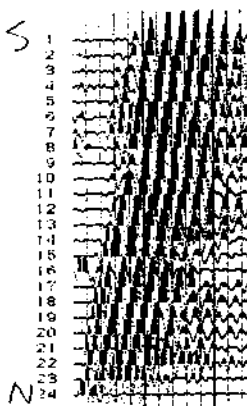
Line #27 #96



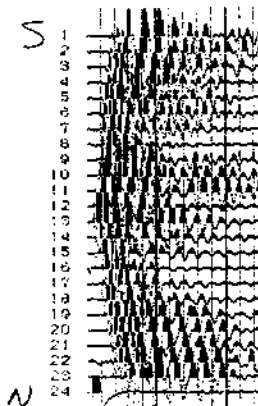
#97



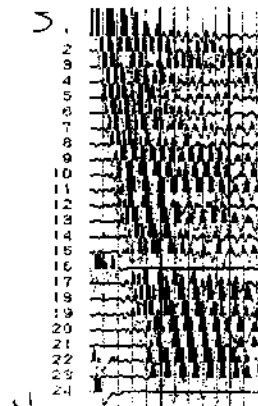
#98



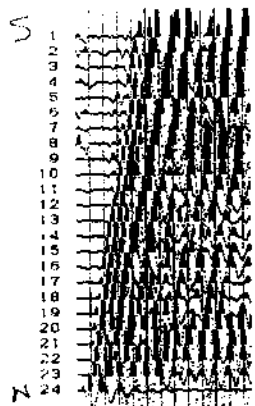
Line #26 #95



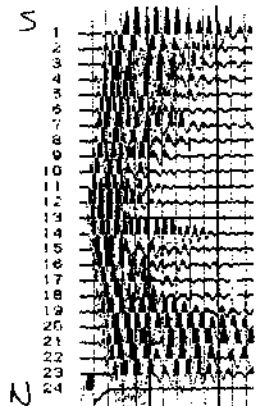
#96



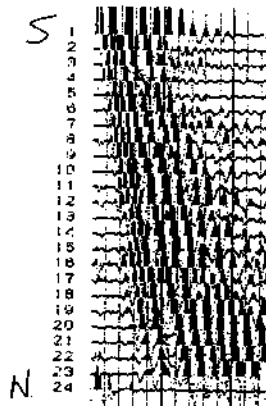
#97



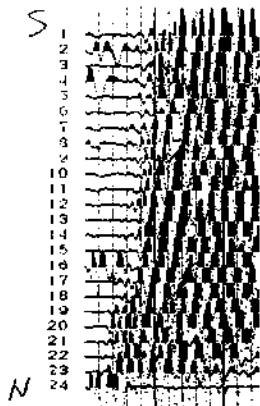
Line #25 #90



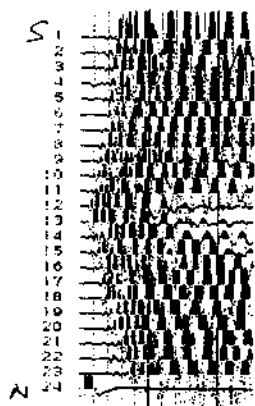
#91



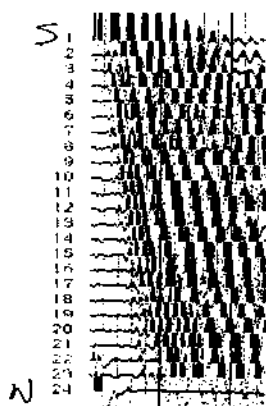
#92



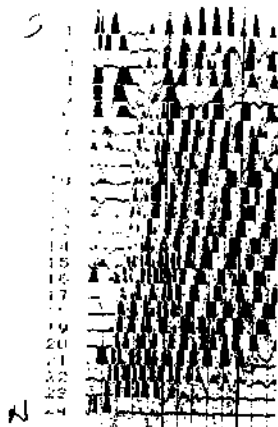
Line #24 #87



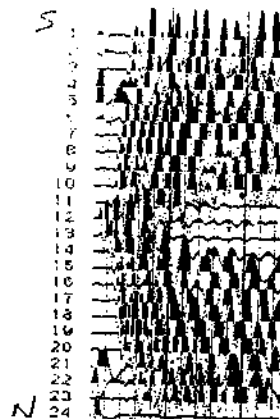
#88



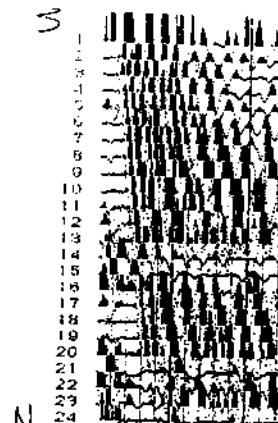
#89



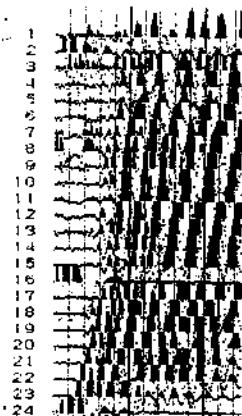
Line #31 Repeat 1A



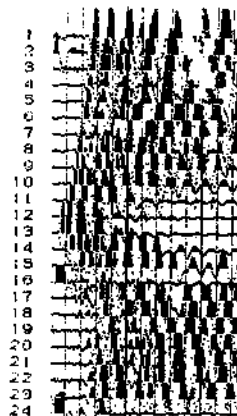
#115



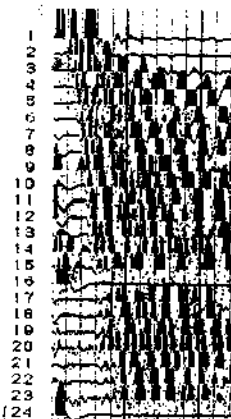
#110



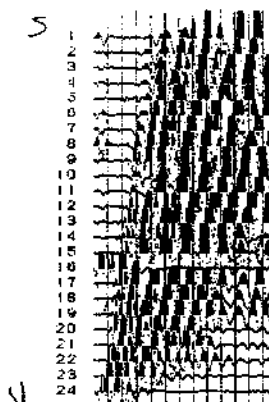
Line #11



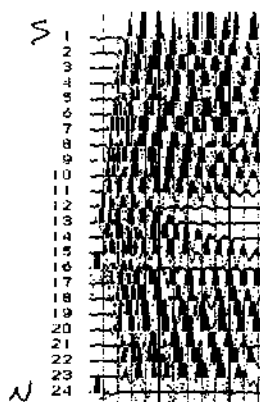
#102



#103



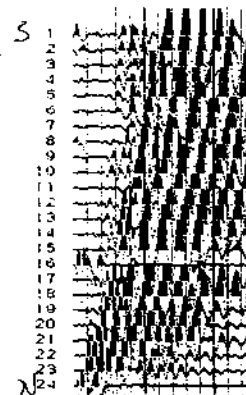
Line #29 #102



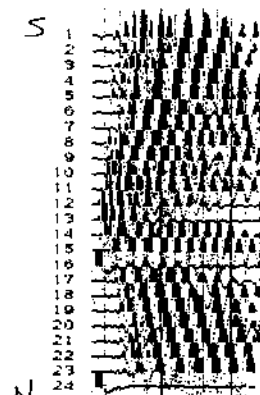
#103



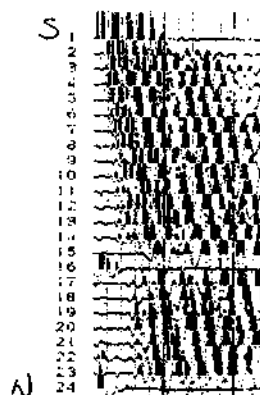
#104



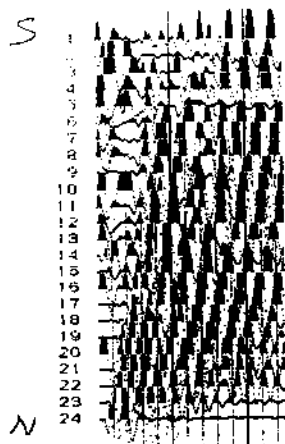
Line #28 #99



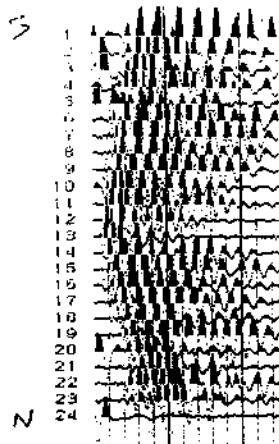
#20



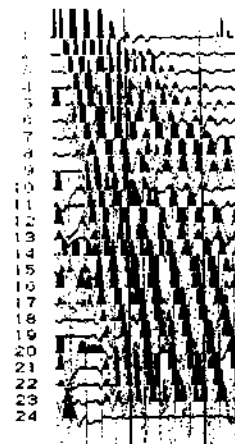
#102



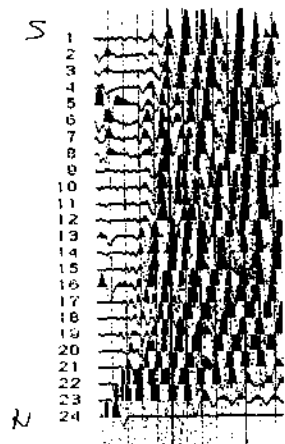
Line #35 #126



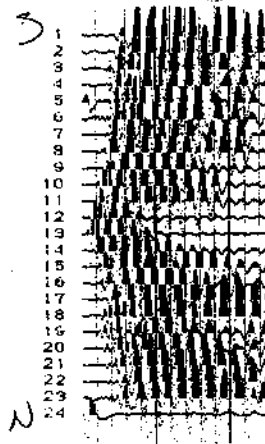
#127



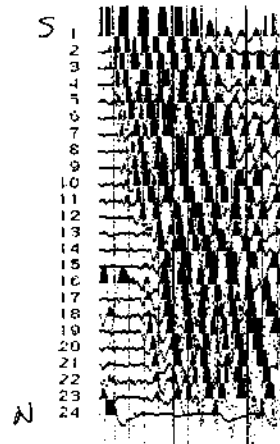
#129



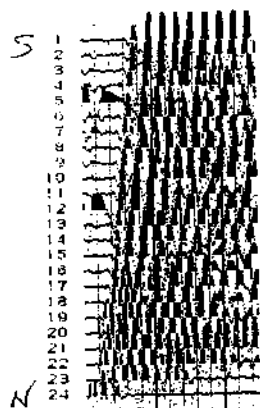
Line #A #123



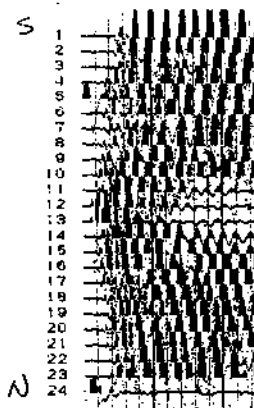
#124



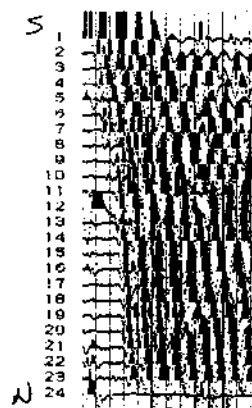
#125



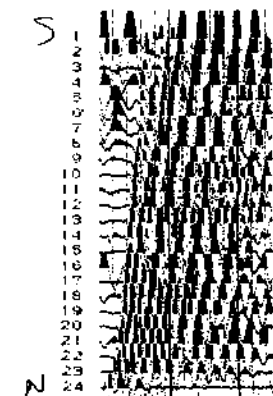
Line #35 120



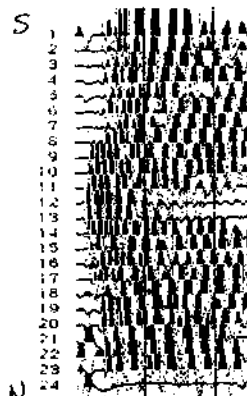
121



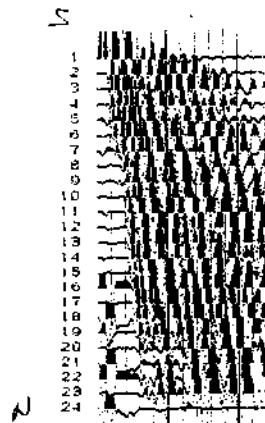
#122



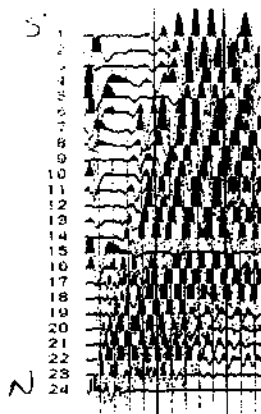
Line #32 #117



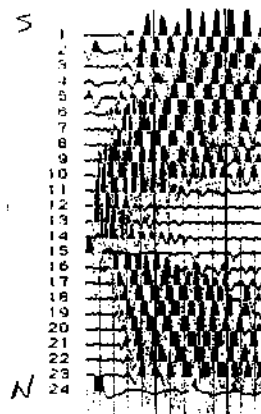
#118



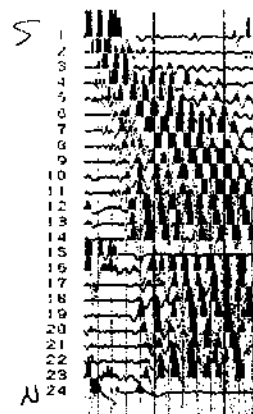
#119



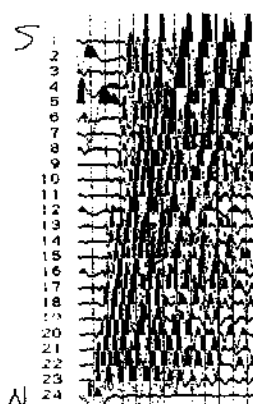
Line #39 #140



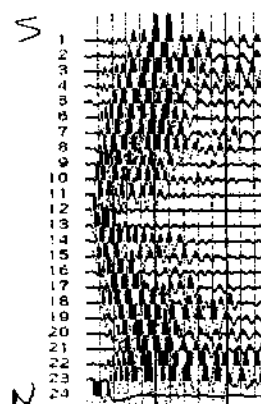
#141



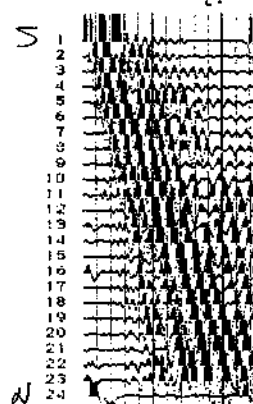
#142



#120 #121



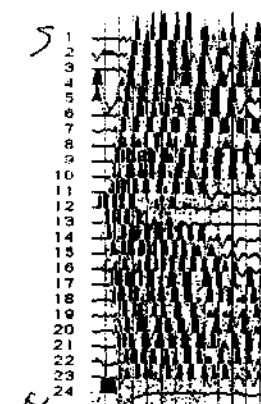
#122



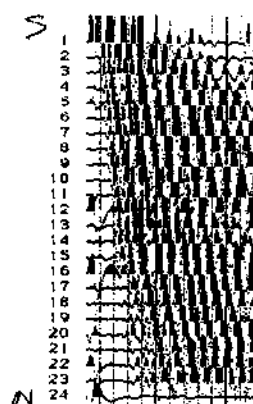
#123



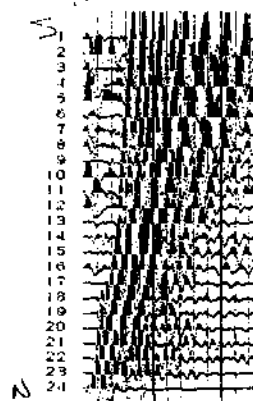
Line #57



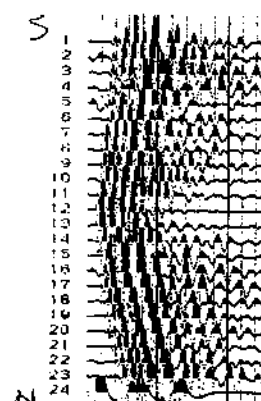
#134



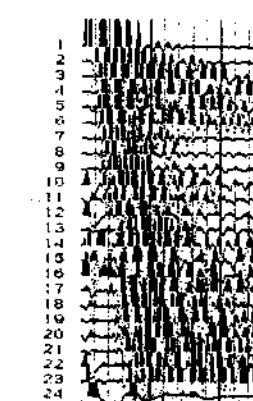
#135



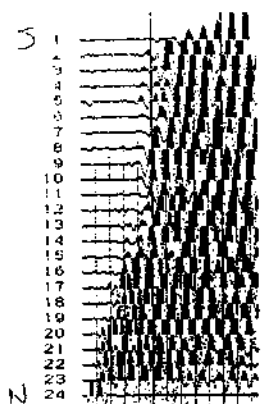
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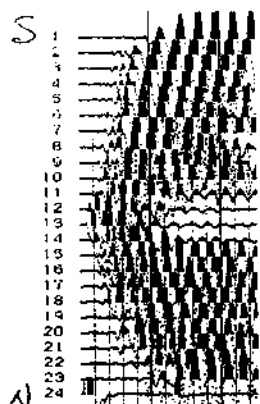
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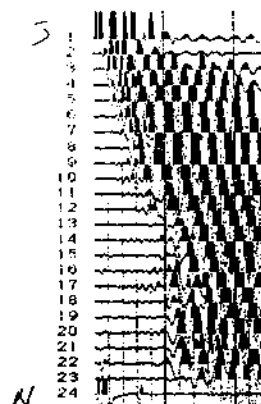
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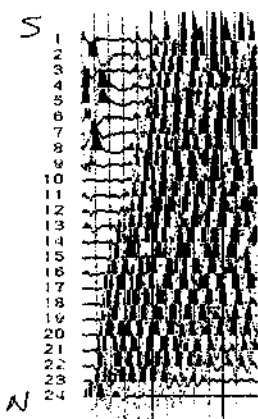
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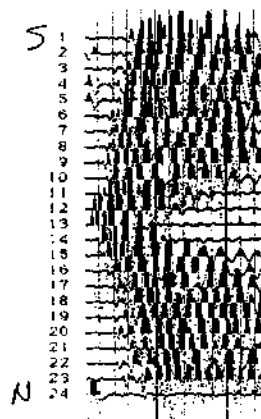
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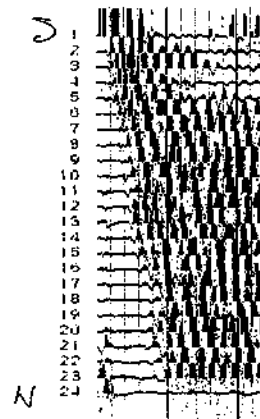
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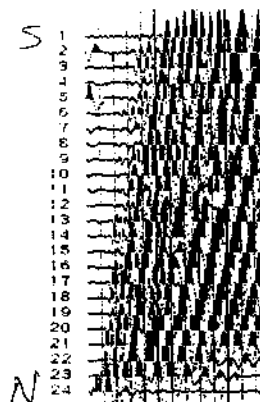
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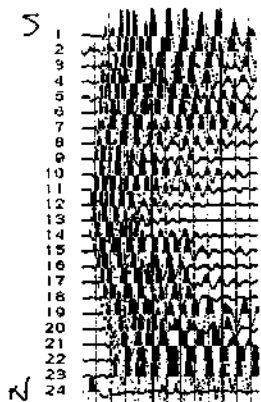
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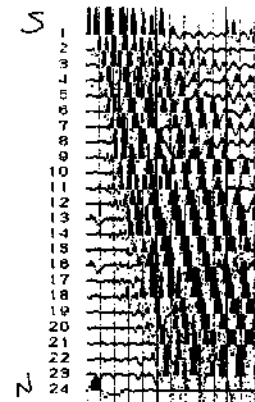
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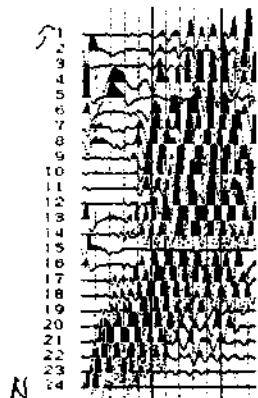
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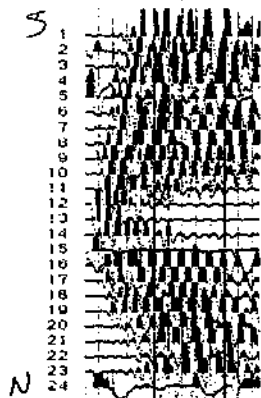
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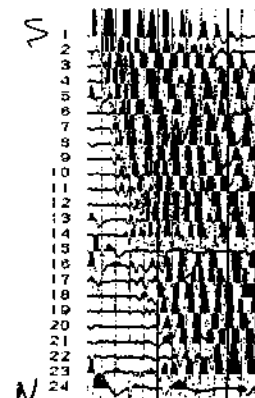
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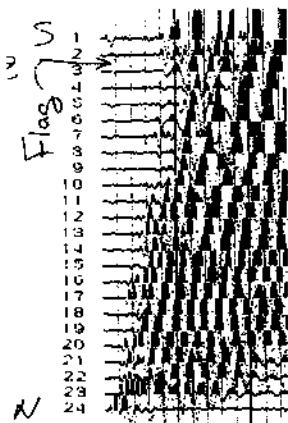
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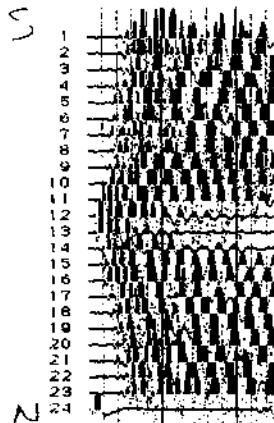
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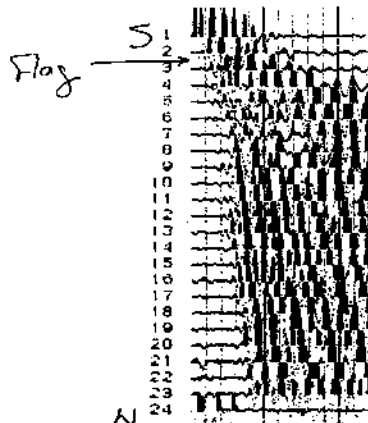
#145



1. - 100 m/sec



#156



#157

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## APPENDIX D • SITE LEGAL DESCRIPTION

# LEGAL DESCRIPTIONS of 1/4 -Acre & 1-Acre Emitter Sites No Drop Sites Roads to 1/4 -ac, 1-ac & ND Sites For ETI

## SITES & ROADS - FOR 1/4-ACRE EMITTER SITES

Site AA	
Road AA	( existing road )
Site AB	
Road AB	( new road )
Site AC	
Road AC	(new road )
Site AE	
Road AE, New	( extension to existing road )
Road AE, Improvement	( improve existing road )
Site AF	
Road AF, Federal Ownership	( new road )
Road AF, State Ownership	( new road )
Site AG	
ND7/AF Roads	
Road AF Improvement, State Ownership	
Clover Butte Road	( existing road )
Road ND7, Improvement	( improve existing road )
Road AF Improvement, Federal Ownership	( improve existing road )
Site AH	
Road AH	( new road )
Site AI	
Road AI	( new road )
Site AJ	
Road AJ	
Site AK	
Road AK	( existing road )
Site AM	
Road AM, New	( extension to existing road )
Road AM, Improvement	( improve existing road )
Site AN	
Road AN	( new road )
Site AO	
Road AO, New	( extension to existing road )
Road AO, Improvement	( improve existing road )
Site AP	
Road AP	( existing road )
Site AQ	
Road AQ	( new road )

Site AT	
Road AT	( new road )
Site AU	
Road AU & ND8	( existing road )
Site AV	
Road AV & Road ND4, New	( extension to existing road )

SITES & ROADS - FOR 1-ACRE (WITHDRAWN LAND) EMITTER SITES

Site BA	
Road BA	( new road )
Site BB	
Road BB	( existing road )
Site BC	
Road BC, New	( extension to existing road )
Road BC, Improvement	( improve existing road )
Site BD	
Road BD	( new road )
Site BE	
Road BE, New	( extension to existing road )
Road BE, Improvement	( improve existing road )
Site BF	
Road BF, New	( extension to existing road )
Road BF, Improvement - Federal	( improve existing road )
Road BF, Improvement - State	
Site BG	
Road BG	( new road )
Site BI	
Road BI, New at Highway 51	(relocated access at Hwy 51)
Road BI / ND 5 New at Sites	( new to existing road )
Road BI, Improvement	( improve existing road )
Site BJ	
Road BJ, New	
Road BJ, Improvement - State Ownership	
Road BJ, Improvement - Federal Ownership	( improve existing road )
Site BK	
Road BK	( existing road )

SITES & ROADS - FOR 5-ACRE NO DROP (WITHDRAWN LAND) SITES

Site ND1	
Roads to Site ND1	
Road ND1	( existing road )
CCC Road	( existing road )
Missile Base Road, Gravel Portion	( existing road )
Site ND4	
Road ND4, New	( extension to existing road )
Road ND4, Improvement	( improve existing road )
Site ND5	
Road BI / ND5 New at Sites	( new to existing road )
Site ND7	
Road ND7, New	( extension to existing road )
ND7/AF Roads	
Road AF Improvement, State Ownership	
Clover Butte Road	( existing road )
Road ND7, Improvement	( improve existing road )
Road AF Improvement, Federal Ownership	( improve existing road )

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Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 6-30-98  
DEA Job No. COEX0302

**LEGAL  
DESCRIPTION  
AA**

**Site AA**

A tract of land lying in the southwest and southeast one-quarters of Section 2, Township 9 South, Range 10 East of the Boise Meridian, Owyhee County, Idaho, more particularly described as follows:

A circular tract of land of radius 60.00 feet, the center of which bears South 0° 19' 09" East a distance of 4,676.75 feet from the north quarter-section corner of Section 2, Township 9 South, Range 10 East, Boise Meridian.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999790.

The tract of land to which this description applies contains 0.260 acres, more or less.



## LEGAL DESCRIPTION- Continued AA

### Road AA

A 60-foot wide strip of land lying in the southeast one-quarter of Section 2, the northeast and southeast one-quarters of Section 11, and the southwest and southeast one-quarters of Section 12, Township 9 South, Range 10 East of the Boise Meridian, Owyhee County, Idaho, being 30.00 feet on each side of the following described centerline.

Beginning at a point which bears South  $0^{\circ} 19' 09''$  East a distance of 4,676.75 feet from the north quarter-section corner of Section 2, Township 9 South, Range 10 East, Boise Meridian; thence South  $85^{\circ} 49' 51''$  East a distance of 162.37 feet; thence along the arc of a 170.00 foot radius curve to the right, through a central angle of  $92^{\circ} 37' 44''$ , an arc distance of 274.84 feet (the long chord bears South  $39^{\circ} 30' 59''$  East a distance of 245.87 feet) to a point of tangency; thence South  $6^{\circ} 47' 53''$  West a distance of 189.81 feet; thence South  $14^{\circ} 47' 32''$  East a distance of 352.47 feet; thence South  $35^{\circ} 06' 12''$  East a distance of 578.61 feet; thence South  $23^{\circ} 13' 10''$  East a distance of 430.62 feet; thence South  $55^{\circ} 12' 46''$  East a distance of 140.49 feet; thence along the arc of a 360.00 foot radius curve to the right, through a central angle of  $36^{\circ} 59' 53''$ , an arc distance of 232.46 feet (the long chord bears South  $36^{\circ} 42' 50''$  East a distance of 228.45 feet) to a point of tangency; thence South  $18^{\circ} 12' 53''$  East a distance of 207.33 feet; thence South  $55^{\circ} 18' 07''$  East a distance of 501.54 feet; thence South  $41^{\circ} 25' 32''$  East a distance of 290.20 feet; thence South  $54^{\circ} 48' 51''$  East a distance of 404.16 feet; thence along the arc of a 135.00 foot radius curve to the right, through a central angle of  $74^{\circ} 55' 35''$ , an arc distance of 176.54 feet (the long chord bears South  $17^{\circ} 21' 04''$  East a distance of 164.23 feet) to a point of tangency; thence South  $20^{\circ} 06' 43''$  West a distance of 209.07 feet; thence South  $22^{\circ} 25' 56''$  West a distance of 509.27 feet; thence South  $12^{\circ} 30' 42''$  East a distance of 201.49 feet; thence South  $0^{\circ} 30' 59''$  East a distance of 122.32 feet; thence South  $45^{\circ} 23' 33''$  East a distance of 113.36 feet; thence South  $15^{\circ} 57' 34''$  East a distance of 97.57 feet; thence along the arc of a 325.00 foot radius curve to the left, through a central angle of  $55^{\circ} 21' 13''$ , an arc distance of 313.98 feet (the long chord bears South  $43^{\circ} 38' 10''$  East a distance of 301.91 feet) to a point of tangency; thence South  $71^{\circ} 18' 47''$  East a distance of 481.96 feet; thence South  $72^{\circ} 27' 03''$  East a distance of 558.23 feet; thence South  $69^{\circ} 34' 17''$  East a distance of 996.23 feet; thence South  $70^{\circ} 26' 29''$  East a distance of 1,359.44 feet; to a terminus point in an existing road sometimes known as Crows Nest Road, said terminus point bears South  $15^{\circ} 47' 06''$  East a distance of 10,555.79 feet from the northwest corner of Section 1, Township 9 South, Range 10 East, Boise Meridian.



**LEGAL DESCRIPTION- Continued**  
**AA**

EXCEPTING THEREFROM Site AA, being a 60-foot-radius circular tract centered on the point of beginning of the above centerline description, and the existing right-of-way, if any, of said existing road sometimes known as Crows Nest Road.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999790.

The tract of land to which this description applies contains 12.15 acres, more or less.



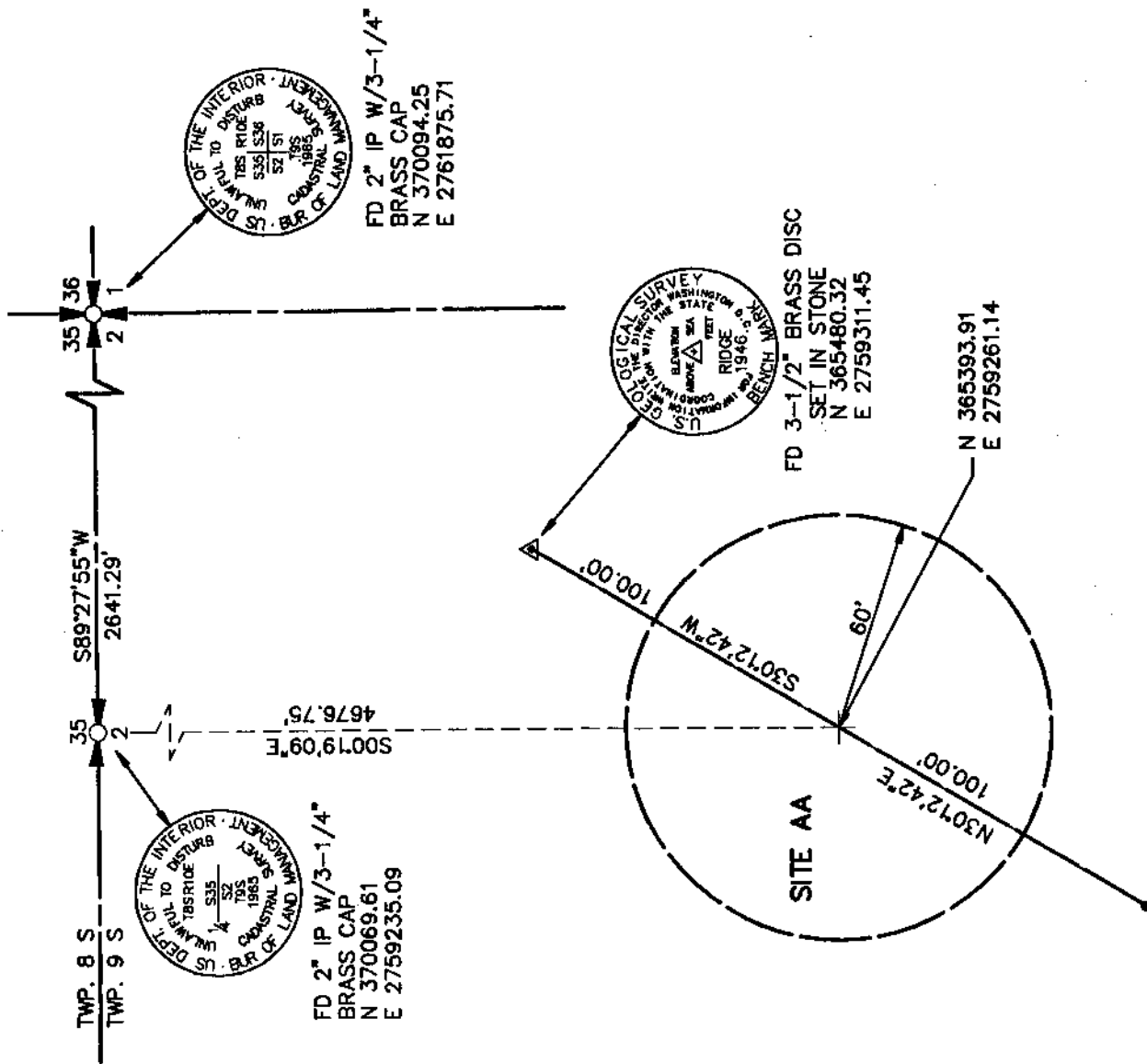
## JUNE 30, 1998



1. COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
2. DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999790.

• SET 5/8" x 30"  
IRON ROD W/  
YELLOW PLASTIC  
CAP STAMPED "DEA  
INC." AS REFERENCE.

M/L MORE OR LESS  
SEC. SECTION  
TWP. TOWNSHIP  
RNG. RANGE  
FD FOUND  
IP IRON PIPE



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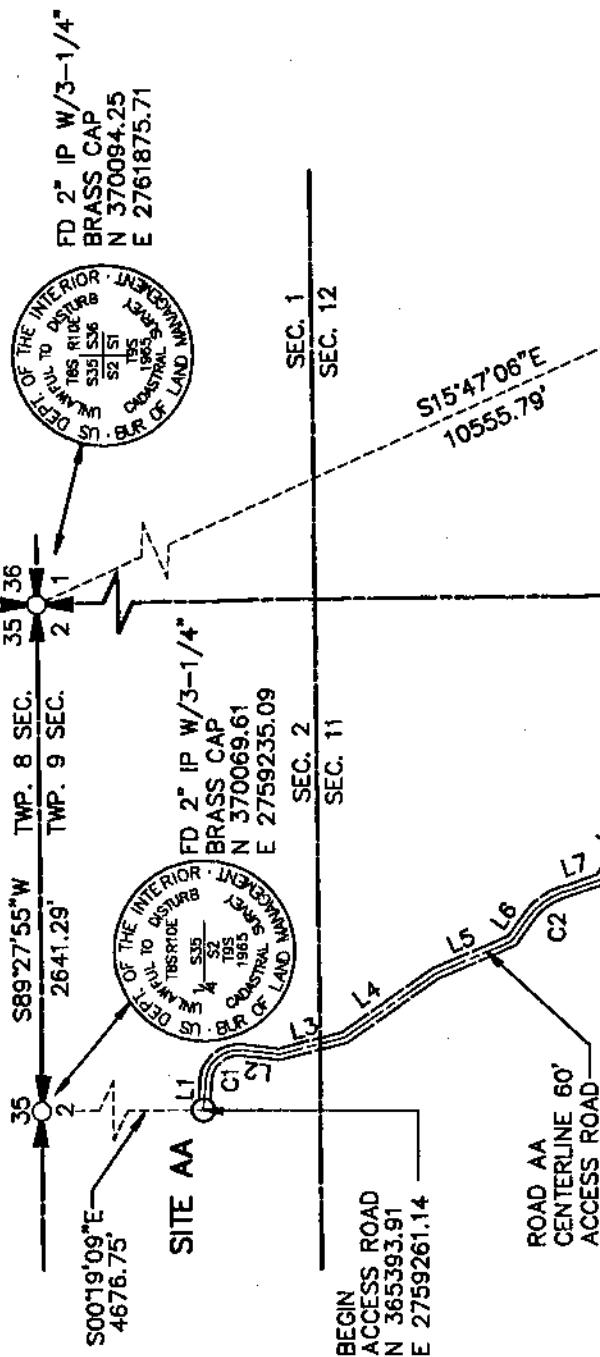


CNC

# ACCESS ROAD TO SITE AA

S.E. 1/4 SEC. 2, E. 1/2 SEC. 11, S. 1/2 SEC. 12, TWP. 9 S., RNG. 10 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO

JUNE 30, 1998



LINE TABLE

LINE	DIRECTION	DISTANCE
L1	S85°49'51"E	162.37'
L2	S06°47'53"W	189.81'
L3	S14°47'32"E	352.47'
L4	S35°06'12"E	578.61'
L5	S23°13'10"E	430.62'
L6	S55°12'46"E	140.49'
L7	S18°12'53"E	207.33'
L8	S55°18'07"E	501.54'
L9	S41°25'32"E	290.20'
L10	S54°48'51"E	404.16'
L11	S20°06'43"W	209.07'
L12	S22°25'56"W	509.27'
L13	S12°30'42"E	201.49'
L14	S00°30'59"E	122.32'
L15	S45°23'33"E	113.36'
L16	S15°57'34"E	97.57'
L17	S71°18'47"E	481.96'
L18	S72°27'03"E	558.23'
L19	S69°34'17"E	996.23'
L20	S70°26'29"E	1359.44'

LEGEND

M/L  
SEC.  
TWP.  
RNG.  
FD  
IP

MORE OR LESS  
SECTION  
TOWNSHIP  
RANGE  
FOUND  
IRON PIPE

CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA
C1	170.00'	274.84'	92°37'44"
C2	360.00'	232.46'	36°59'53"
C3	135.00'	176.54'	74°55'35"
C4	325.00'	313.98'	55°21'13"

## NOTES

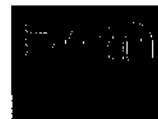
- COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
- DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999790.

DEEM

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Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 7-8-98  
DEA Job No. COEX0302

## LEGAL DESCRIPTION AB

### Site AB

A tract of land lying in the southwest one-quarter of Section 26, Township 9 South, Range 7 East of the Boise Meridian, Owyhee County, Idaho, more particularly described as follows:

A circular tract of land of radius 60.00 feet, the center of which bears North 80° 44' 43" East a distance of 616.96 feet from the southwest corner of Section 26, Township 9 South, Range 7 East, Boise Meridian.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999753.

The tract of land to which this description applies contains 0.260 acres, more or less.

**LEGAL DESCRIPTION- Continued**  
**AB**

**Road AB**

A 60-foot wide strip of land lying in the southwest one-quarter of Section 26, Township 9 South, Range 7 East of the Boise Meridian, Owyhee County, Idaho, being 30.00 feet on each side of the following described centerline.

Beginning at a point which bears North 80° 44' 43" East a distance of 616.96 feet from the southwest corner of Section 26, Township 9 South, Range 7 East, Boise Meridian; thence North 53° 28' 46" East a distance of 198 feet, more or less, to the center of an existing road.

EXCEPTING THEREFROM Site AB, being a 60-foot-radius circular tract centered on the point of beginning of the above centerline description, and the existing right-of-way of said existing road, if any.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999753.

The tract of land to which this description applies contains 0.19 acres, more or less.



S.W. 1/4, SEC. 26, TWP. 9 S., RNG. 7 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO  
JULY 8, 1998

SITE AB



FD 2" IP W/3-1/4"  
BRASS CAP  
N 345486.53  
E 2662173.08



**LEGEND**

- SET 5/8" x 30" IRON ROD W/ YELLOW PLASTIC CAP STAMPED "DEA INC." AS REFERENCE.

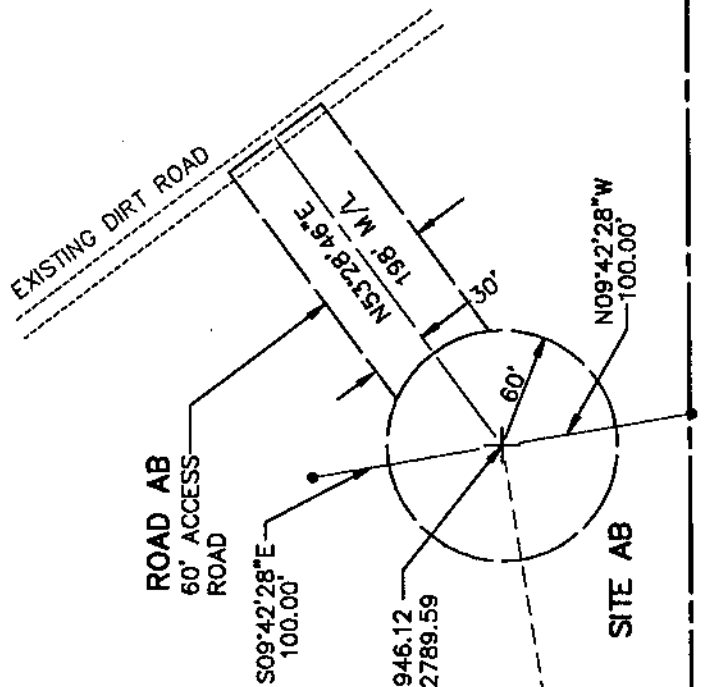
**DAVID EVANS AND ASSOCIATES, INC.**  
415 - 118TH AVENUE S.E.  
BELLEVUE, WA. 98005-3518 (425) 519-6500

M/L MORE OR LESS  
SEC. SECTION  
TWP. TOWNSHIP  
RNG. RANGE  
FD FOUND  
IP IRON PIPE

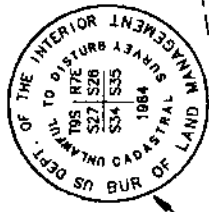
**NOTES**

1. COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
2. DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999753.

FD 2" IP W/3-1/4"  
BRASS CAP  
N 342854.85  
E 2664823.66



FD 2" IP W/3-1/4"  
BRASS CAP  
N 342846.92  
E 2662180.82

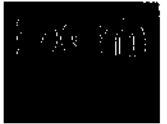


N 80°44'43"E  
616.96'

N 89°49'41"E  
2643.51'

S00°10'04"E  
2640.28'

27 26  
34 35



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Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 6-30-98  
DEA Job No. COEX0302

LEGAL DESCRIPTION  
AC

**Site AC**

A tract of land lying in the northwest one-quarter of Section 36, Township 10 South, Range 9 East of the Boise Meridian, Owyhee County, Idaho, more particularly described as follows:

A circular tract of land of radius 60.00 feet, the center of which bears North 58° 07' 23" East a distance of 886.74 feet from the west quarter-section corner of Section 36, Township 10 South, Range 9 East, Boise Meridian.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999746.

The tract of land to which this description applies contains 0.260 acres, more or less.



**LEGAL DESCRIPTION- Continued**  
**AC**

**Road AC**

A 60-foot wide strip of land lying in the northwest, southwest and southeast one-quarters of Section 36, Township 10 South, Range 9 East of the Boise Meridian, Owyhee County, Idaho, being 30.00 feet on each side of the following described centerline.

Beginning at a point which bears North 58° 07' 23" East a distance of 886.74 feet from the west quarter-section corner of Section 36, Township 10 South, Range 9 East, Boise Meridian; thence South 40° 23' 28" East a distance of 771.92 feet; thence South 36° 20' 50" East a distance of 717.82 feet; thence South 84° 54' 28" East a distance of 726.32 feet; thence South 89° 59' 34" East a distance of 796.46 feet; thence South 70° 46' 45" East a distance of 680.16 feet to a terminus point in an existing road, said terminus point bears North 35° 44' 49" East a distance of 2,027.67 feet from the south quarter-section corner of said Section 36.

EXCEPTING THEREFROM Site AO, being a 60-foot-radius circular tract centered on the point of beginning of the above centerline description, and the right-of-way, if any, of said existing road.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999746.

The tract of land to which this description applies contains 4.97 acres, more or less.



o:\projSAFE\c\coex0302\legals\coex-ac.leg

# **SITE AC** SEC. 36, TWP. 10 S., RNG. 9 E., BOISE MERIDIAN, OWYHEE COUNTY, IDAHO JUNE 30, 1998

BEGIN ACCESS ROAD  
 N 309123.49  
 E 2731419.26

**SITE AC**

60' RADIUS

N38°53'17"E  
 100.00'  
 S38°53'17"W  
 100.00'

N58°07'23"E  
 886.74'



FD 1" IP  
 W/2-1/2" BRASS CAP  
 N 308655.33  
 E 2730666.44

## **LEGEND**

- SET 5/8" x 30" IRON ROD W/ YELLOW PLASTIC CAP STAMPED "DEA INC." AS REFERENCE.

SEC. SECTION  
 TWP. TOWNSHIP  
 RNG. RANGE  
 FD FOUND  
 IP IRON PIPE

## **NOTES**

1. COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
2. DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999746.



END ACCESS ROAD  
 N 307669.30  
 E 2734506.25

ROAD AC  
 CENTERLINE 60'  
 ACCESS ROAD

S84°54'28"E  
 726.32'  
 S89°59'34"E  
 796.46'

S36°20'50"E  
 717.82'

S70°46'45"E  
 680.16'

EXISTING ROAD

FD 1" IP  
 W/2-1/2" BRASS CAP  
 N 306024.05  
 E 2733321.97



TWP. 10 S.  
 TWP. 11 S.



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**LEGAL DESCRIPTION**  
**AE**

**Site AE**

A parcel of land located in the northeast one-quarter (NE $\frac{1}{4}$ ) of Section 17, Township 13 South, Range 9 East of the Boise Meridian, Owyhee County, Idaho, more particularly described as follows:

A circular parcel of land with a radius of 60.00 feet, the center of which, having a coordinate of N. 230,558.64, E. 2,711,015.01, said center bears South 17° 27' 47" East, a distance of 1,662.78 feet from the north quarter corner of said Section 17, said quarter corner having a coordinate of N. 232142.44 and E. 2710510.24, which is also the Point of Beginning for the new access road to the site.

Bearings of this description are based on the Idaho coordinate system of NAD1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground. State Plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999709.

**Based on a Plat provided by Bureau of Land Management named "U.S. Air Force Site AE Easement" (Cadd file Site\_ae.dwg) dtd. 24 Mar 1999.**

The tract of land to which this description applies contains 0.260 acres, more or less.

**Road AE, New**

A 60-foot wide strip of land lying in the northeast one-quarter of Section 17, Township 13 South, Range 9 East of the Boise Meridian, Owyhee County, Idaho, being 30.00 feet on each side of the following described centerline.

**BEGINNING** at a point which bears South 17° 27' 47" East a distance of 1,662.78 feet from the north quarter corner of said Section 17, said center having a coordinate of N. 230,558.64 and E 2,711,015.01; thence North 70° 25' 00" East a distance of 224.55 feet to a terminus point in an existing road,

**EXCEPTING THEREFROM** Site AE, being a 60-foot-radius circular tract centered on the point of beginning of the above centerline description, and also the existing right-of-way, if any, of said existing road.

Bearings of this description are based on the Idaho coordinate system of NAD 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground. State Plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999709.

**Based on a Plat provided by Bureau of Land Management named "U.S. Air Force Site AE Easement" (Cadd file Site\_ae.dwg) dtd. 24 Mar 1999.**

The tract of land to which this description applies contains 0.268 acres, more or less.



**Road AE, Improvement**

A 60-foot wide strip of land lying in the northeast and southeast one-quarter of Section 17; northeast and southeast one-quarter of Section 20; northeast one-quarter of Section 29; the northwest, southwest, and southeast one-quarters of Section 28; the northeast and southeast one-quarters of Section 33, the northwest, southwest, and southeast one-quarters of Section 34; and the southwest and southeast one-quarters of Section 35, Township 13 South, Range 9 East of the Boise Meridian, Owyhee County, Idaho, being 30.00 feet on each side of the following described centerline.

Commencing at the center point of said Site AE which bears South 17° 27' 47" East a distance of 1,662.78 feet from the north quarter corner of said Section 17, said center having a coordinate of N. 230,558.64, E 2,711,015.01; thence North 70°25'00" East a distance of 224.55 feet to the **POINT OF BEGINNING** in an existing road at point No. 1; said point lying in an existing road as shown on said B.L.M Plat referred to below; thence South 19°34'57" East, a distance of 862.76 feet to the beginning of a curve to the left, to the point no 2; thence along said curve to the left having a long chord of south 48°44'26" east, 487.37 feet, a radius of 500 feet, and a length of 509.08 feet to point No. 3; thence South 77°53'54" East, a distance of 223.00 feet to point No. 4; thence South 37°16'00" East, a distance of 288.09 feet to point No. 5; thence South 08°43'55" East, a distance of 573.35 feet to point No. 6; thence South 01°30'43" West, a distance of 785.13 feet to point No. 7; thence South 01°52'08" East, a distance of 1,575.08 feet to point No.8; thence South 11°27'47" East, a distance of 832.90 feet to point No. 9; thence South 03°21'06" West, a distance of 448.09' feet to point No. 10; thence South 11°34'29" East, a distance of 2,141.84 feet to point No. 11; thence South 07°03'29" East, a distance of 1,905.39 feet to point No. 12, said point bears South 03°15'03" East, a distance of 529.24 feet from

Section Corner common to Sections 20,21,28,29 of said Township and Range; thence South 34°09'06" East, a distance of 737.55 feet to point No. 13; thence South 40°50'10" East, a distance of 349.43 feet to point No. 14; thence South 44°08'29" East, a distance of 1,379.14 feet to point No. 15; thence South 41°38'28" East, a distance of 487.39 feet to the beginning of a curve to the right, and point No. 16; thence along said curve to the right having a long chord of south 22°38'23" east, 293.03 feet, a radius of 450 feet, a length of 298.47 feet to point No. 17; thence South 03°38'19" East, a distance of 285.06 feet to point No. 18; thence South 22°03'25" East, a distance of 734.98 feet to point No. 19; thence South 43°16'01" East, a distance of 160.93 feet to point No. 20; thence South 24°40'11" East, a distance of 649.65 feet to point No. 21; thence South 00°20'00" East, a distance of 997.11 feet to point No. 22; thence South 09°19'11" East, a distance of 566.63 feet to point No. 23; thence South 34°29'43" East, a distance of 184.11 feet to point No. 24; thence South 62°41'17" East, a distance of 307.69 feet to point No. 25; thence South 76°31'17" East, a distance of 145.29 feet to point No. 26; thence South 62°14'13" East, a distance of 385.93 feet to point No. 27; thence South 27°03'53" East, a distance of 138.96 feet to the beginning of a curve to the right, and point No. 28; thence along said curve to the right having a long chord of south 40°12'39" east, 909.79 feet, a radius of 2000 feet, a length of 917.82 feet to point No. 29; thence South 53°21'24" East, a distance of 80.03 feet to point No. 30; thence South 65°28'25" East, a distance of 543.83 feet to the beginning of a curve to the left, and point No. 31; thence along said curve to the left having a long chord of south 77°56'03" east, 733.70 feet, a radius of 1700 feet, a length of 739.52 feet to point No. 32; thence South 89°36'18" East, a distance of 339.94 feet to point No. 33; thence South 63°14'55" East, a distance of 409.35 feet to point No. 34, thence South 70°02'13" East, a distance of 1,244.60 feet to point No. 35; thence South 57°43'42" East, a distance of 2,761.82 feet to point

No. 36; thence South  $76^{\circ}43'11''$  East, a distance of 366.33 feet to point No. 37; thence South  $88^{\circ}07'44''$  East, a distance of 1,305.94 feet to point No. 38; thence South  $73^{\circ}28'43''$  East, a distance of 597.49 feet to point No. 39; thence South  $88^{\circ}43'04''$  East, a distance of 3,658.12 feet to the intersection of the said centerline with the centerline of Clover Three Creek Road, and point No. 40, also being the **TERMINUS**, said point lying North  $73^{\circ}46'30''$  West 129.90 feet from the southeast Section Corner of Section 35 of said Township and Range, having coordinates of N 211,148.49 and E 2,729,093.60.

Bearings of this description are based on the Idaho coordinate system of NAD 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground. State Plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999709.

**Based on a Plat provided by Bureau of Land Management named "U.S. Air Force Site AE Easement" (CADD file Site\_ae.dwg, dtd. 24 Mar 1999).**

The tract of land to which this description applies contains 42.59 acres, more or less.

By: SDM 24 May 1999  
Chkd: RFG 03 Jun 1999  
Map: SE-RE-1183  
Cadd: mc\mi\realest\pc\eti\dwg\site\_ae.dwg  
Revised:  
Doc: 001464.doc



DAVID EVANS AND ASSOCIATES, INC.

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Bellevue, Washington 98005

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Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 8-18-98  
DEA Job No. COEX0302

## LEGAL DESCRIPTION AF-Federal

### Site AF

A tract of land lying in the northeast one-quarter of Section 2, Township 13 South, Range 8 East of the Boise Meridian, Owyhee County, Idaho, more particularly described as follows:

A circular tract of land of radius 60.00 feet, the center of which bears South 44° 06' 13" West a distance of 998.31 feet from the closing corner monument set for the northeast corner of Section 2, Township 13 South, Range 8 East, Boise Meridian.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999715.

The tract of land to which this description applies contains 0.260 acres, more or less.

## LEGAL DESCRIPTION- Continued AF-Federal

### Road AF, Federal Ownership

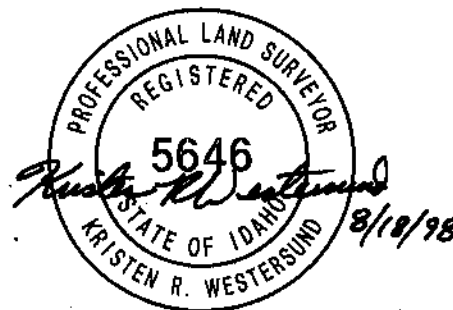
A 60-foot wide strip of land lying in the northeast one-quarter of Section 2, Township 13 South, Range 8 East; and the southeast one-quarter of Section 25 and the southeast one-quarter of Section 35, Township 12 South, Range 8 East; and the southwest one-quarter of Section 30 and the northwest one-quarter of Section 31, Township 12 South, Range 9 East of the Boise Meridian, Owyhee County, Idaho, being 30.00 feet on each side of the following described centerline.

Beginning at a point which bears South 44° 06' 13" West a distance of 998.31 feet from the closing corner monument set for the northeast corner of Section 2, Township 13 South, Range 8 East, Boise Meridian.; thence North 37° 30' 48" East a distance of 1,135.56 feet; thence North 50° 33' 12" East a distance of 544.87 feet; thence North 41° 16' 37" East a distance of 847.16 feet; thence North 25° 44' 57" East a distance of 545.07 feet; thence North 47° 18' 37" East a distance of 871.43 feet; thence North 45° 13' 08" East a distance of 749.18 feet; thence North 42° 33' 54" East a distance of 768.50 feet; thence North 40° 54' 15" East a distance of 652.10 feet; thence North 54° 43' 26" East a distance of 2,508.05 feet to a point in an existing road, said point bears South 28° 03' 03" East a distance of 16.09 feet from the northeast corner of Section 36, Township 12 South, Range 8 East, Boise Meridian.

EXCEPTING THEREFROM the portion of said 60-foot wide strip lying within Section 36, Township 12 South, Range 8 East, Boise Meridian (which is vested in the State of Idaho); Site AF, being a 60-foot-radius circular tract centered on the point of beginning of the above centerline description; and the existing right-of-way, if any, of said existing road.

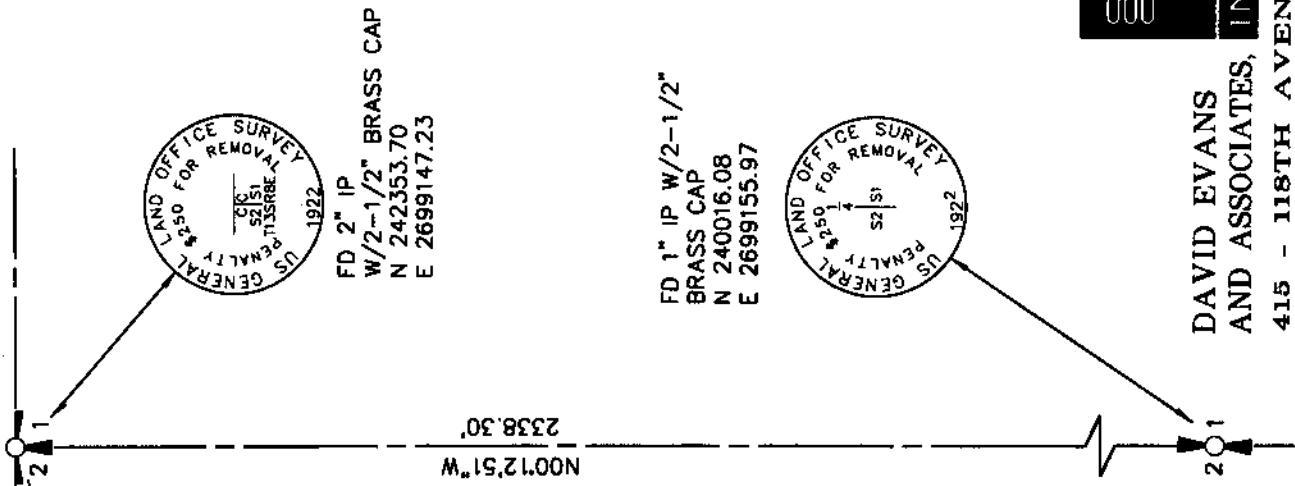
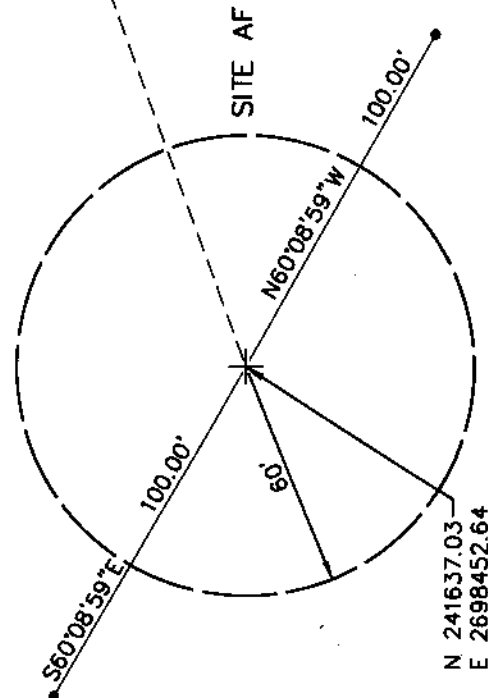
Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999715.

The tract of land to which this description applies contains 1.69 acres, more or less.





**SITE AF**  
N.E. 1/4, SEC. 2, TWP. 13 S., RNG. 8 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO  
AUGUST 18, 1998



- LEGEND**
- SET 5/8" x 30" IRON ROD W/ YELLOW PLASTIC CAP STAMPED "DEA CONTROL" AS REFERENCE.

SEC. SECTION  
TWP. TOWNSHIP  
RNG. RANGE  
FD FOUND  
IP IRON PIPE

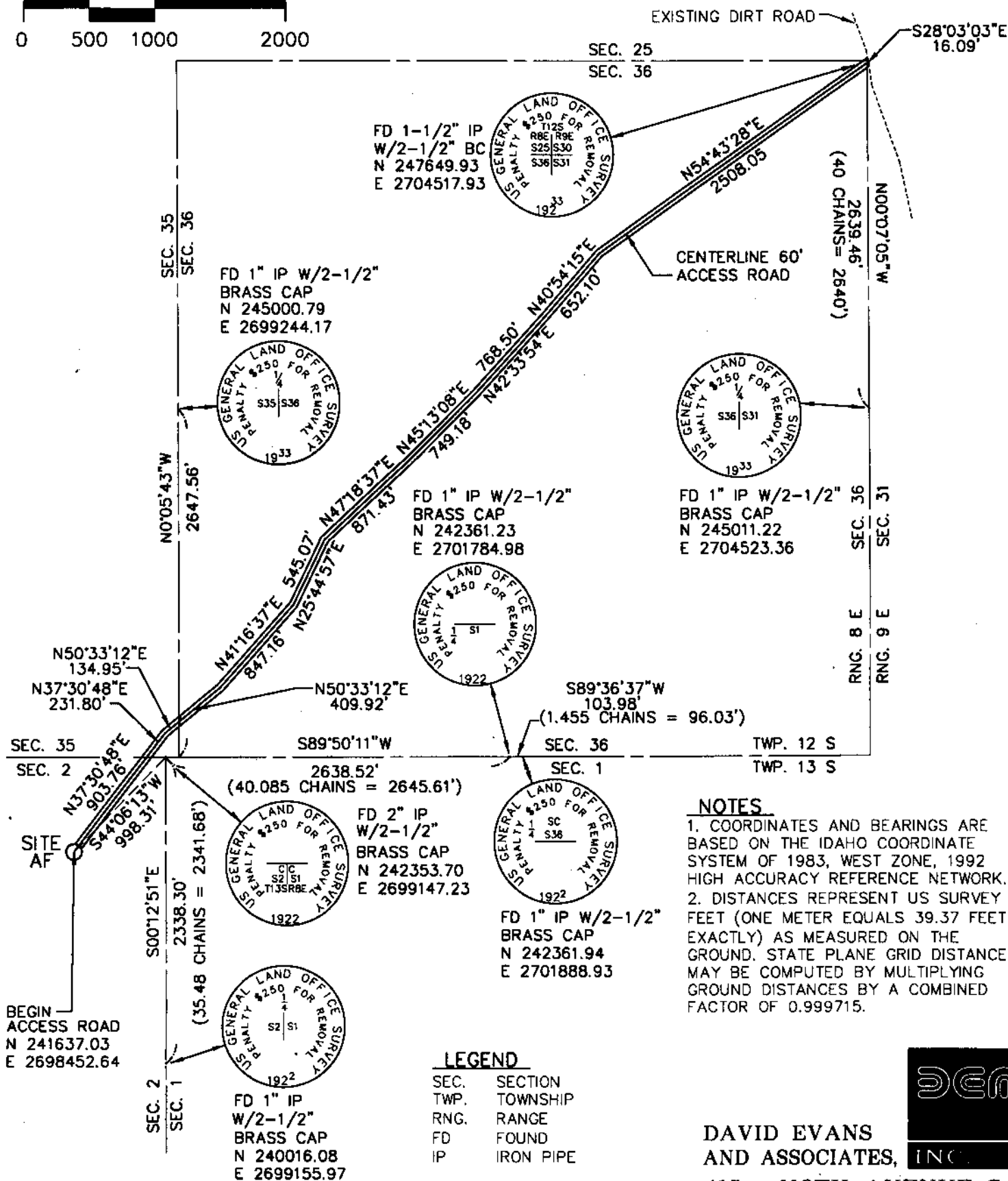
**NOTES**

1. COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.

2. DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999715.

DAVID EVANS  
AND ASSOCIATES, INC.  
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BELLEVUE, WA. 98005-3518 (425) 519-6500

SEC. 35 AND 36, TWP. 12 S., RNG. 8 E.,  
SEC. 2, TWP. 13 S., RNG. 8 E.,  
SEC. 30 AND 31, TWP. 12 S., RNG. 9 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO  
AUGUST 18, 1998



## NOTES

1. COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.  
2. DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999715.

## LEGEND

SEC.	SECTION
TWP.	TOWNSHIP
RNG.	RANGE
FD	FOUND
IP	IRON PIPE

DAVID EVANS  
AND ASSOCIATES, INC.

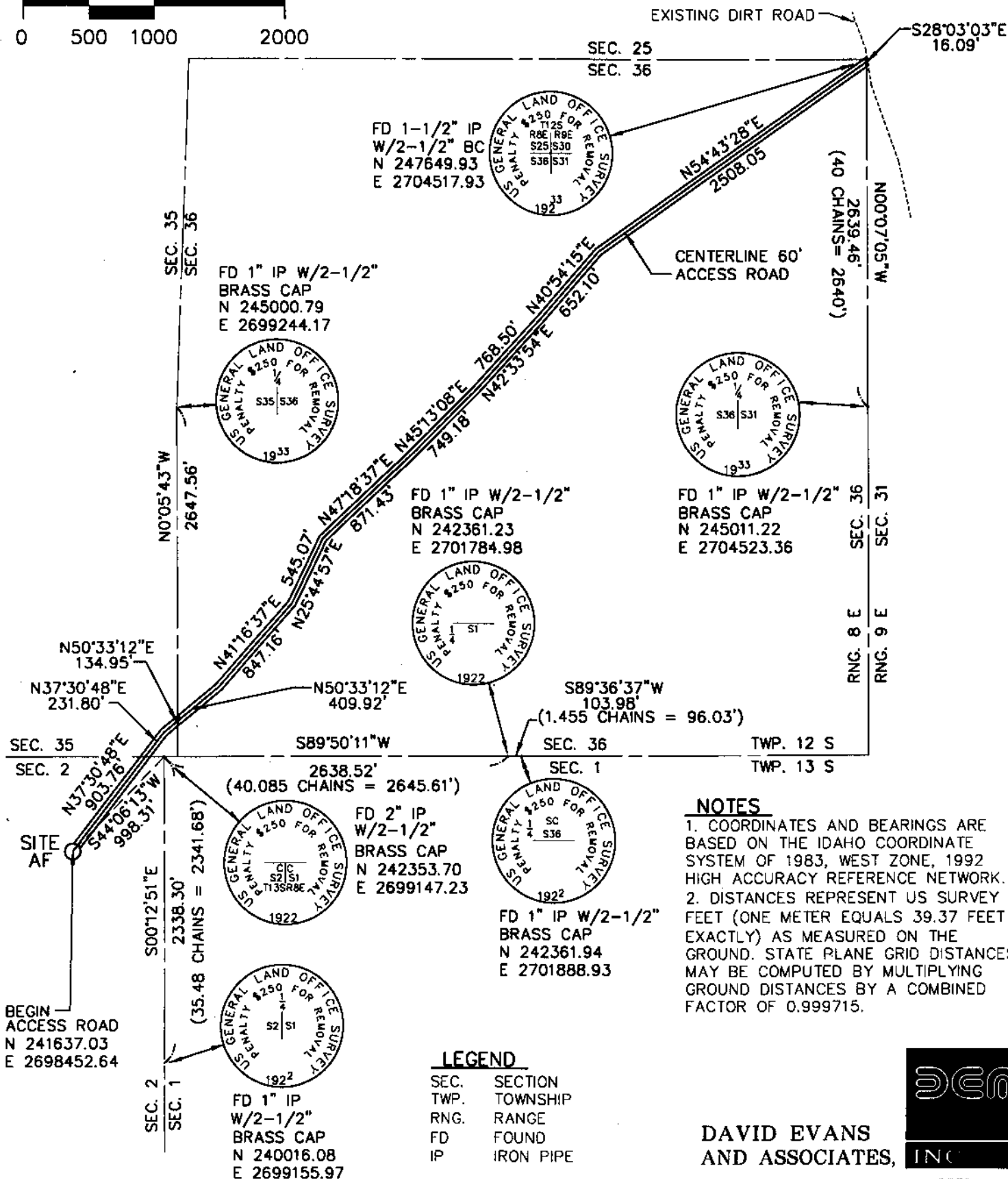
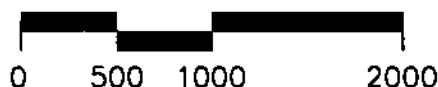
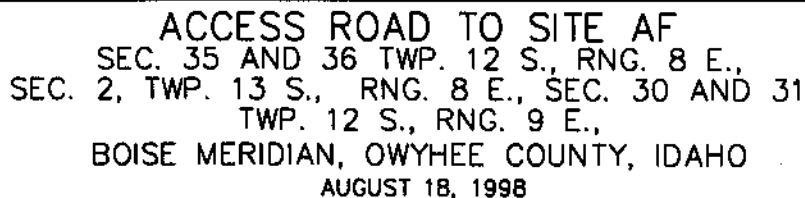
415 - 118TH AVENUE S.E.  
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Fax: 425.519.5361





## NOTES

1. COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.

2. DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999715.

## LEGEND

SEC.	SECTION
TWP.	TOWNSHIP
RNG.	RANGE
FD	FOUND
IP	IRON PIPE

DAVID EVANS  
AND ASSOCIATES, INC.

415 - 118TH AVENUE S.E.  
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Enhanced Training in Idaho (ETI), Phase 1  
Mountain Home Air Force Base, Idaho

**LEGAL DESCRIPTION**  
**AG**

**Site AG**

A tract of land lying in the right-of-way of the Road ND7 New, said road being a 100-foot wide strip of land lying in the southwest and northwest one-quarters of Section 19, Township 12 South, Range 9 East of the Boise Meridian, Owyhee County, Idaho.



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Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 8-18-98  
DEA Job No. COEX0302

**LEGAL DESCRIPTION  
ND 7 / AF ROADS**

**Road AF Improvement-State Ownership**

A 60-foot wide strip of land lying in the northeast one-quarter of Section 36, Township 12 South, Range 8 East of the Boise Meridian, Owyhee County, Idaho, being 30.00 feet on each side of the following described centerline.

Beginning at a point in an existing road, said point bears North 4° 44' 35" West a distance of 74.90 feet from the northeast corner of Section 36, Township 12 South, Range 8 East of the Boise Meridian, thence generally along an existing road South 8° 48' 16" East a distance of 273.77 feet.

EXCEPTING THEREFROM the portion of said 60-foot wide strip lying outside Section 36, Township 12 South, Range 8 East, Boise Meridian.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999720.

The tract of land to which this description applies contains 0.05 acres, more or less.

*[Faint, illegible signature or stamp]*

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DAVID EVANS AND ASSOCIATES, INC.

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Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 8-18-98  
DEA Job No. COEX0302

**LEGAL DESCRIPTION  
ND 7 / AF ROADS**

**Clover Butte Road**

A 100-foot wide strip of land lying in the southeast and southwest one-quarters of Section 27, the southeast one-quarter of Section 28, the northeast and northwest one-quarters of Section 33, the northeast, southeast, and southwest one-quarters of Section 32, and the southeast one-quarter of Section 31, Township 11 South, Range 9 East and the northeast, northwest, and southwest one-quarters of Section 6, Township 12 South, Range 9 East of the Boise Meridian, Owyhee County, Idaho, being 50.00 feet on each side of the following described centerline.

Beginning at a point in an existing road sometimes known as Clover Three Creek Road, said point bears North 61° 38' 51" East a distance of 4,373.22 feet from the southwest corner of Section 27, Township 11 South, Range 9 East, Boise Meridian, thence generally along an existing road sometimes known as Clover Butte Road South 89° 46' 07" West a distance of 226.86 feet; thence South 70° 35' 14" West a distance of 1,048.45 feet; thence South 66° 54' 59" West a distance of 252.25 feet; thence South 75° 16' 22" West a distance of 1,166.75 feet; thence South 63° 41' 40" West a distance of 454.58 feet; thence South 70° 23' 52" West a distance of 471.66 feet; thence South 58° 33' 46" West a distance of 276.04 feet; thence South 74° 35' 42" West a distance of 1,035.99 feet; thence South 63° 52' 19" West a distance of 899.95 feet; thence South 54° 34' 43" West a distance of 507.64 feet; thence South 62° 10' 55" West a distance of 691.65 feet; thence South 67° 53' 50" West a distance of 245.35 feet; thence South 63° 38' 53" West a distance of 642.60 feet; thence South 67° 44' 17" West a distance of 2,137.15 feet; thence South 66° 08' 05" West a distance of 1,145.25 feet; thence South 74° 07' 19" West a distance of 380.57 feet; thence South 62° 08' 51" West a distance of 2,152.43 feet; thence South 51° 19' 57" West a distance of 418.03 feet; thence South 65° 55' 31" West a distance of 717.88 feet; thence South 60° 38' 03" West a distance of 1,538.65 feet; thence South 64° 46' 14" West a distance of 771.80 feet; thence South 53° 57' 43" West a distance of



**LEGAL DESCRIPTION - Continued**  
**ND 7 / AF ROADS**

506.86 feet; thence South 59° 47' 55" West a distance of 1,181.91 feet; thence South 34° 57' 05" West a distance of 801.35 feet; thence South 42° 47' 32" West a distance of 389.83 feet; thence South 61° 36' 02" West a distance of 458.45 feet; thence South 47° 01' 02" West a distance of 521.14 feet; thence South 29° 27' 11" West a distance of 818.49 feet; thence South 15° 53' 16" West a distance of 904.58 feet; thence South 14° 14' 36" West a distance of 698.22 feet; thence South 4° 49' 39" West a distance of 297.83 feet; thence South 21° 41' 54" West a distance of 287.26 feet; thence South 3° 38' 49" West a distance of 34.66 feet to a terminus point, said terminus point bears North 12° 03' 20" East a distance of 669.70 feet from the southwest corner of Section 6, Township 12 South, Range 9 East, Boise Meridian.

The sidelines of said strip of land are to be extended or shortened to begin on the westerly right-of-way line, if any, of said existing road sometimes known as Clover Three Creek Road.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999720.

The tract of land to which this description applies contains 55.21 acres, more or less.



**LEGAL DESCRIPTION - Continued**  
**ND 7 / AF ROADS**

**Road ND7, Improvement**

A 100-foot wide strip of land lying in the southwest one-quarter of Section 6, the northwest and southwest one-quarter of Section 7, the northwest and southwest one-quarters of Section 18, and the northwest and southwest one-quarters of Section 19, Township 12 South, Range 9 East and the northeast one-quarter of Section 12, Township 12 South, Range 8 East of the Boise Meridian, Owyhee County, Idaho, being 50.00 feet on each side of the following described centerline.

Beginning at a point in an existing road sometimes known as Clover Butte Road, said point bears North 12° 03' 20" East a distance of 669.70 feet from the southwest corner of Section 6, Township 12 South, Range 9 East, Boise Meridian, thence generally along an existing road South 3° 38' 49" West a distance of 735.26 feet; thence South 13° 49' 03" West a distance of 556.63 feet; thence South 4° 28' 14" West a distance of 331.63 feet; thence South 18° 55' 00" East a distance of 205.51 feet; thence South 6° 37' 51" West a distance of 309.20 feet; thence South 8° 59' 01" East a distance of 380.14 feet; thence South 30° 09' 51" East a distance of 177.40 feet; thence South 10° 51' 01" East a distance of 559.99 feet; thence South 25° 56' 59" East a distance of 1,371.83 feet; thence South 52° 35' 27" East a distance of 577.56 feet; thence South 37° 39' 06" East a distance of 506.97 feet; thence South 17° 38' 25" West a distance of 393.79 feet; thence South 27° 56' 40" West a distance of 145.56 feet; thence South 21° 37' 49" West a distance of 371.98 feet; thence South 3° 21' 31" East a distance of 269.37 feet; thence South 5° 53' 15" West a distance of 492.56 feet; thence South 9° 32' 46" East a distance of 257.51 feet; thence South 7° 35' 56" West a distance of 1,461.71 feet; thence South 17° 05' 59" West a distance of 293.08 feet; thence South 2° 14' 05" West a distance of 1,066.31 feet; thence South 10° 56' 09" West a distance of 206.73 feet; thence South 5° 28' 03" West a distance of 735.11 feet; thence South 18° 31' 37" West a distance of 529.63 feet; thence South 2° 48' 33" East a distance of 206.20 feet; thence South 18° 53' 21" West a distance of 206.35 feet; thence South 10° 55' 52" West a distance of 317.14 feet; thence South 6° 48' 10" West a distance of 743.68 feet; thence South 0° 44' 20" West a distance of 284.49 feet; thence South 19° 50' 38" West a distance of 666.57 feet to a terminus point, said terminus point bears North 41° 36' 25" East a distance of 300.52 feet from the west quarter-section corner of Section 19, Township 12 South, Range 9 East, Boise Meridian.

The sidelines of said strip of land are to be extended or shortened to end on the extended or shortened sidelines of Road ND7, New, as described for this project.



**LEGAL DESCRIPTION - Continued**  
**ND 7 / AF ROADS**

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999720.

The tract of land to which this description applies contains 32.97 acres, more or less.

**Road AF Improvement, Federal Ownership**

A 60-foot wide strip of land lying in the southwest one-quarter of Section 19, the southwest one-quarter of Section 30, the northwest, southwest, and southeast one-quarters of Section 31, and the southwest and southeast one-quarters of Section 32, Township 12 South, Range 9 East; the southeast one-quarter of Section 24, and the northeast and southeast one-quarters of Section 25, Township 12 South, Range 8 East; and the northwest one-quarter of Section 5, Township 13 South, Range 9 East of the Boise Meridian, Owyhee County, Idaho, being 30.00 feet on each side of the following described centerline.

Beginning at a point in an existing road, said point bears North 41° 36' 25" East a distance of 300.52 feet from the west quarter-section corner of Section 19, Township 12 South, Range 9 East of the Boise Meridian, thence generally along an existing road South 19° 50' 38" West a distance of 197.01 feet; thence South 0° 42' 21" West a distance of 279.66 feet; thence South 12° 16' 30" West a distance of 633.64 feet; thence South 3° 56' 25" West a distance of 853.36 feet; thence South 4° 11' 39" East a distance of 151.28 feet; thence South 2° 23' 35" West a distance of 827.88 feet; thence South 8° 59' 53" West a distance of 444.68 feet; thence South 5° 25' 37" West a distance of 560.23 feet; thence South 4° 28' 25" East a distance of 446.22 feet; thence South 13° 59' 28" East a distance of 214.67 feet; thence South 10° 21' 48" West a distance of 261.50 feet; thence South 1° 02' 32" West a distance of 1,243.49 feet; thence South 4° 02' 25" East a distance of 1,466.23 feet; thence South 0° 40' 17" West a distance of 261.43 feet; thence South 20° 19' 57" East a distance of 303.87 feet to a point that bears North 4° 44' 35" West a distance of 74.90 feet from the northeast corner of Section 36, Township 12 South, Range 8 East of the Boise Meridian; thence South 8° 48' 16" East a distance of 273.77 feet; ~~thence South 48° 33' 05" East a distance of 616.15 feet; thence South 12° 01' 41" East a distance of 435.82 feet; thence South 27° 46' 46" East a distance of 476.88 feet; thence South 45° 27' 57" East a distance of 280.46 feet; thence South 27° 29' 30" East a distance of 557.00 feet; thence South 66° 58' 07" East a distance of 377.04 feet; thence South 74° 57' 38" East a distance of 500.57~~



**LEGAL DESCRIPTION - Continued**  
**ND 7 / AF ROADS**

~~feet, thence South 75° 50' 04" East a distance of 800.10 feet, thence South 55° 21' 10" East a distance of 800.10 feet, thence South 20° 40' 17" East a distance of 899.07 feet, thence South 54° 29' 52" East a distance of 840.07 feet, thence South 00° 20' 07" East a distance of 120.55 feet, thence South 64° 40' 39" East a distance of 550.01 feet, thence South 51° 35' 10" East a distance of 832.61 feet, thence North 87° 45' 00" East a distance of 507.70 feet, thence North 67° 04' 05" East a distance of 644.67 feet, thence North 00° 41' 40" East a distance of 214.00 feet, thence North 56° 14' 20" East a distance of 433.06 feet, thence South 60° 04' 32" East a distance of 478.68 feet, thence South 46° 24' 15" East a distance of 405.00 feet, thence South 00° 52' 28" East a distance of 304.33 feet, thence North 62° 04' 50" East a distance of 507.44 feet, thence North 74° 54' 58" East a distance of 354.15 feet, thence North 84° 34' 00" East a distance of 342.50 feet, thence North 67° 45' 35" East a distance of 233.71 feet, thence South 02° 00' 20" East a distance of 189.48 feet, thence South 00° 20' 00" East a distance of 847.05 feet, thence North 57° 10' 12" East a distance of 224.34 feet, thence North 70° 45' 00" East a distance of 207.45 feet, thence North 64° 03' 13" East a distance of 444.54 feet, thence North 04° 19' 01" East a distance of 66.05 feet to a terminus point in an existing road, said terminus point bears North 4° 51' 43" West a distance of 1,020.04 feet from the southeast corner of Section 02, Township 12 South, Range 0 East, Boise Meridian.~~

The sidelines of said strip of land are to be extended or shortened to begin on the southerly sideline of Road ND7, New and end on the extended or shortened sidelines of Road ~~AG, New~~, as described for this project. AF Improvement

EXCEPTING THEREFROM the portion of said 60-foot wide strip lying within Section 36, Township 12 South, Range 8 East, Boise Meridian.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999720.

The tract of land to which this description applies contains ~~20.70~~ acres, more or less.

11.50





**LEGAL DESCRIPTION - Continued**  
**ND 7 / AF ROADS**

~~**Road AG, New**~~

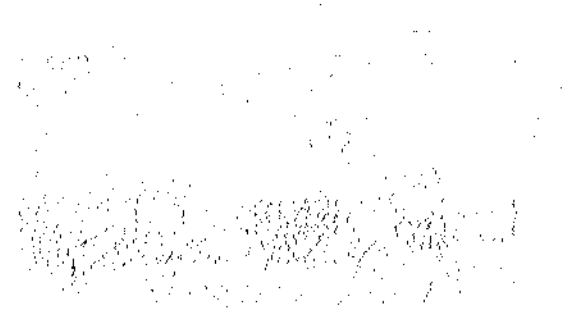
~~A 60 foot wide strip of land lying in the southeast one quarter of Section 32, Township 12 South, Range 9 East of the Boise Meridian, Owyhee County, Idaho, being 30.00 feet on each side of the following described centerline.~~

~~Beginning at a point in an existing road, said point bears North 4° 51' 43" West a distance of 1,020.94 feet from the southeast corner of Section 32, Township 12 South, Range 9 East of the Boise Meridian, thence South 0° 38' 42" East a distance of 238.04 feet to a terminus point that bears North 6° 08' 31" West a distance of 782.73 feet from the southeast corner of Section 32, Township 12 South, Range 9 East, Boise Meridian.~~

~~The sidelines of said strip of land are to be extended or shortened to begin on the extended or shortened sidelines of Road AG, Improved, as described for this project, and end on the northerly boundary of Site AG, being a 60 foot radius circular tract centered on the terminus point of the above centerline description.~~

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999720.

~~The tract of land to which this description applies contains 0.25 acres, more or less.~~



# ACCESS ROADS TO SITES ND 7 / AF

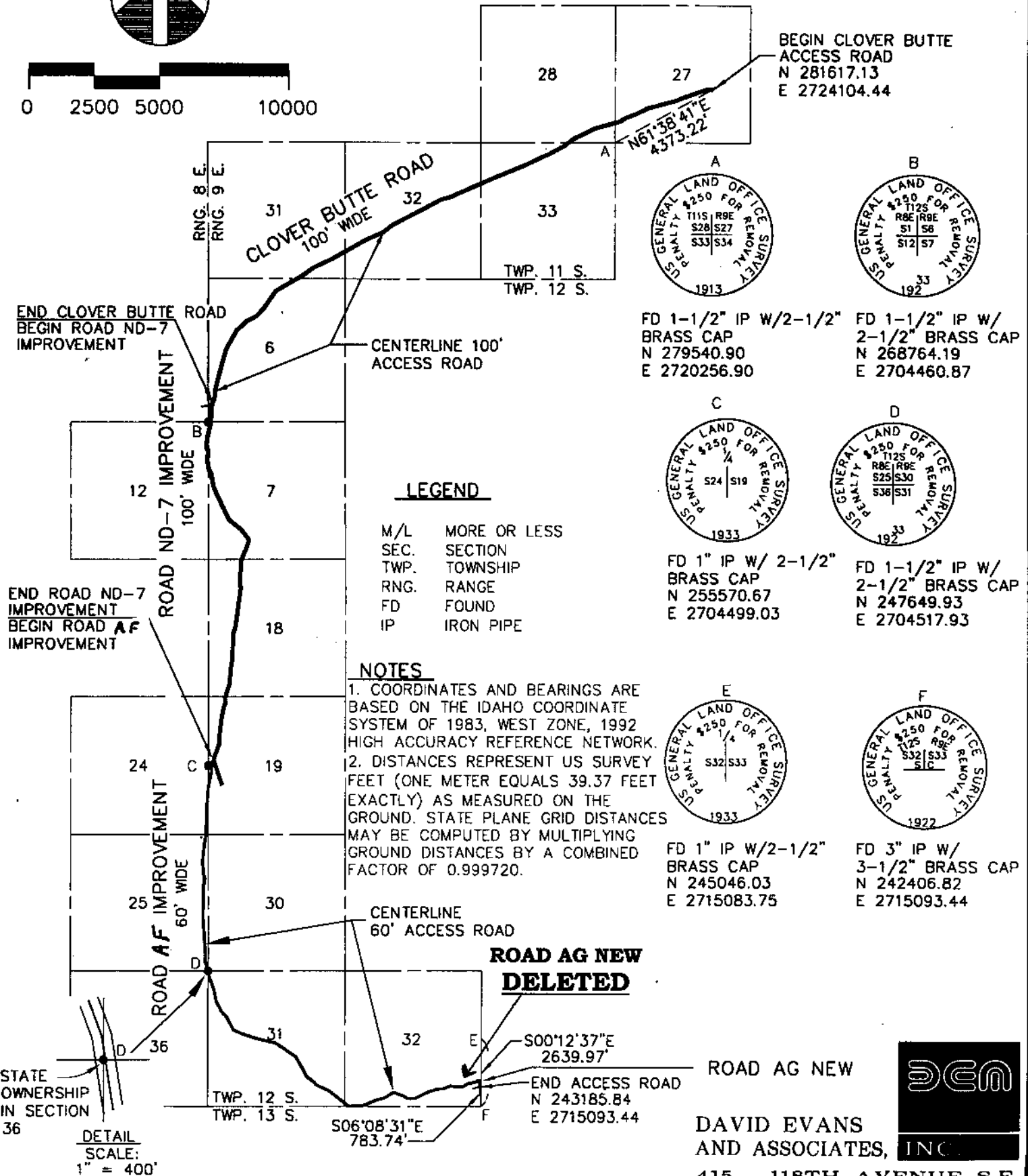
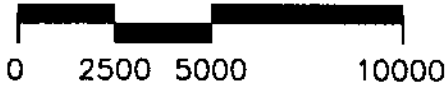
SEC. 27, 28, 31, 32, AND 33, TWP. 11 S., RNG. 9 E.,

SEC. 12, 24, 25 AND 36, TWP. 12 S., RNG. 8 E.,

SEC. 6, 7, 18, 19, 30, 31, AND 32, TWP. 12 S., RNG. 9 E.,

BOISE MERIDIAN, Owyhee County, IDAHO

AUGUST 18, 1998



DAVID EVANS  
AND ASSOCIATES, INC.

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BELLEVUE, WA. 98005-3518 (425) 519-6500



**DAVID EVANS AND ASSOCIATES, INC.**

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Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 7-8-98  
DEA Job No. COEX0302

**LEGAL DESCRIPTION  
AH**

**Site AH**

A tract of land lying in the southeast one-quarter of Section 30, Township 10 South, Range 9 East of the Boise Meridian, Owyhee County, Idaho, more particularly described as follows:

A circular tract of land of radius 60.00 feet, the center of which bears North 36° 12' 00" East a distance of 1,839.74 feet from the south quarter-section corner of Section 30, Township 10 South, Range 9 East, Boise Meridian.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999744.

The tract of land to which this description applies contains 0.260 acres, more or less.



**LEGAL DESCRIPTION- Continued**  
**AH**

**Road AH**

A 60-foot wide strip of land lying in the southeast and southwest one-quarters of Section 30 and in the northwest one-quarter of Section 31, Township 10 South, Range 9 East of the Boise Meridian, Owyhee County, Idaho, being 30.00 feet on each side of the following described centerline.

Beginning at a point which bears North 36° 12' 00" East a distance of 1,839.74 feet from the south quarter-section corner of Section 30, Township 10 South, Range 9 East, Boise Meridian; thence South 44° 50' 20" West a distance of 422.96 feet; thence South 32° 59' 21" West a distance of 332.57 feet; thence South 38° 42' 05" West a distance of 536.62 feet; thence South 33° 11' 14" West a distance of 554.23 feet; thence South 32° 54' 20" West a distance of 320 feet, more or less, to the center of an existing road sometimes known as Clover Three Creek Road.

EXCEPTING THEREFROM Site AH, being a 60-foot-radius circular tract centered on the point of beginning of the above centerline description, and the existing right-of-way, if any, of said existing road sometimes known as Clover Three Creek Road.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999744.

The tract of land to which this description applies contains 2.88 acres, more or less.



o:\projSAFE\c\coex0302\legals\coex-ah.rv1

S. 1/2 SEC. 30, N.W. 1/4 SEC. 31, TWP. 10 S., RNG. 9 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO

JULY 8, 1998

SITE AH

# LEGEND

- SET 5/8" x 30" IRON ROD W/ YELLOW PLASTIC CAP STAMPED "DEA INC." AS REFERENCE.

M/L MORE OR LESS  
SEC. SECTION  
TWP. TOWNSHIP  
RNG. RANGE  
FD FOUND  
IP IRON PIPE

SITE AH  
N 312737.48  
E 2707946.47  
S30°11'02"E 100.00'  
N30°11'02"W 100.00'  
S44°50'20"W 100.00'  
S42°00'00"E 100.00'  
60' RADIUS

CENTERLINE 60' ACCESS ROAD

ROAD AH

S32°59'21"W 332.57'  
S38°42'05"W 536.62'  
N36°12'00"E 1839.74'  
S37°14'W 554.23'  
S32°54'20"W 320 M/L

FD 1" IP W/2-1/2" BRASS CAP  
N 311253.26  
E 2706860.19



FD 1-1/2" IP  
W/2-1/2" BRASS CAP  
N 311255.51  
E 2709499.47



S89°57'04"W 2639.96'

CLOVER THREE CREEK ROAD

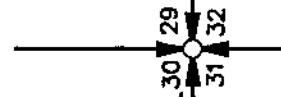
DAVID EVANS AND ASSOCIATES, INC.

415 - 118TH AVENUE S.E.  
BELLEVUE, WA. 98005-3518 (425) 619-6500



## NOTES

- COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
- DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999744.





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Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 7-8-98  
DEA Job No. COEX0302

## LEGAL DESCRIPTION AI

### Site AI

A tract of land lying in the northeast one-quarter of Section 31, Township 9 South, Range 9 East of the Boise Meridian, Owyhee County, Idaho, more particularly described as follows:

A circular tract of land of radius 60.00 feet, the center of which bears South 66° 11' 49" West a distance of 1,903.97 feet from the northeast corner of Section 31, Township 9 South, Range 9 East, Boise Meridian.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999746.

The tract of land to which this description applies contains 0.260 acres, more or less.



**LEGAL DESCRIPTION- Continued**  
**AI**

**Road AI**

A 60-foot wide strip of land lying in the northeast one-quarter of Section 31 and in the northwest and southwest one-quarters of Section 32, Township 9 South, Range 9 East of the Boise Meridian, Owyhee County, Idaho, being 30.00 feet on each side of the following described centerline.

Beginning at a point which bears South 66° 11' 49" West a distance of 1,903.97 feet from the northeast corner of Section 31, Township 9 South, Range 9 East, Boise Meridian; thence South 17° 10' 24" West a distance of 112.49 feet; thence South 0° 06' 48" West a distance of 143.21 feet; thence South 7° 37' 19" West a distance of 279.38 feet; thence South 9° 42' 46" East a distance of 257.24 feet; thence South 62° 04' 11" East a distance of 590.80 feet; thence South 58° 24' 42" East a distance of 777.80 feet; thence South 65° 28' 20" East a distance of 342.91 feet; thence South 55° 19' 24" East a distance of 741.21 feet to a point which bears South 64° 07' 03" East a distance of 362.78 feet from the east quarter-section corner of said Section 31; thence South 46° 48' 23" East a distance of 202 feet, more or less, to the center of an existing road.

EXCEPTING THEREFROM Site AI, being a 60-foot-radius circular tract centered on the point of beginning of the above centerline description, and the existing right-of-way, if any, of said existing road.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999746.

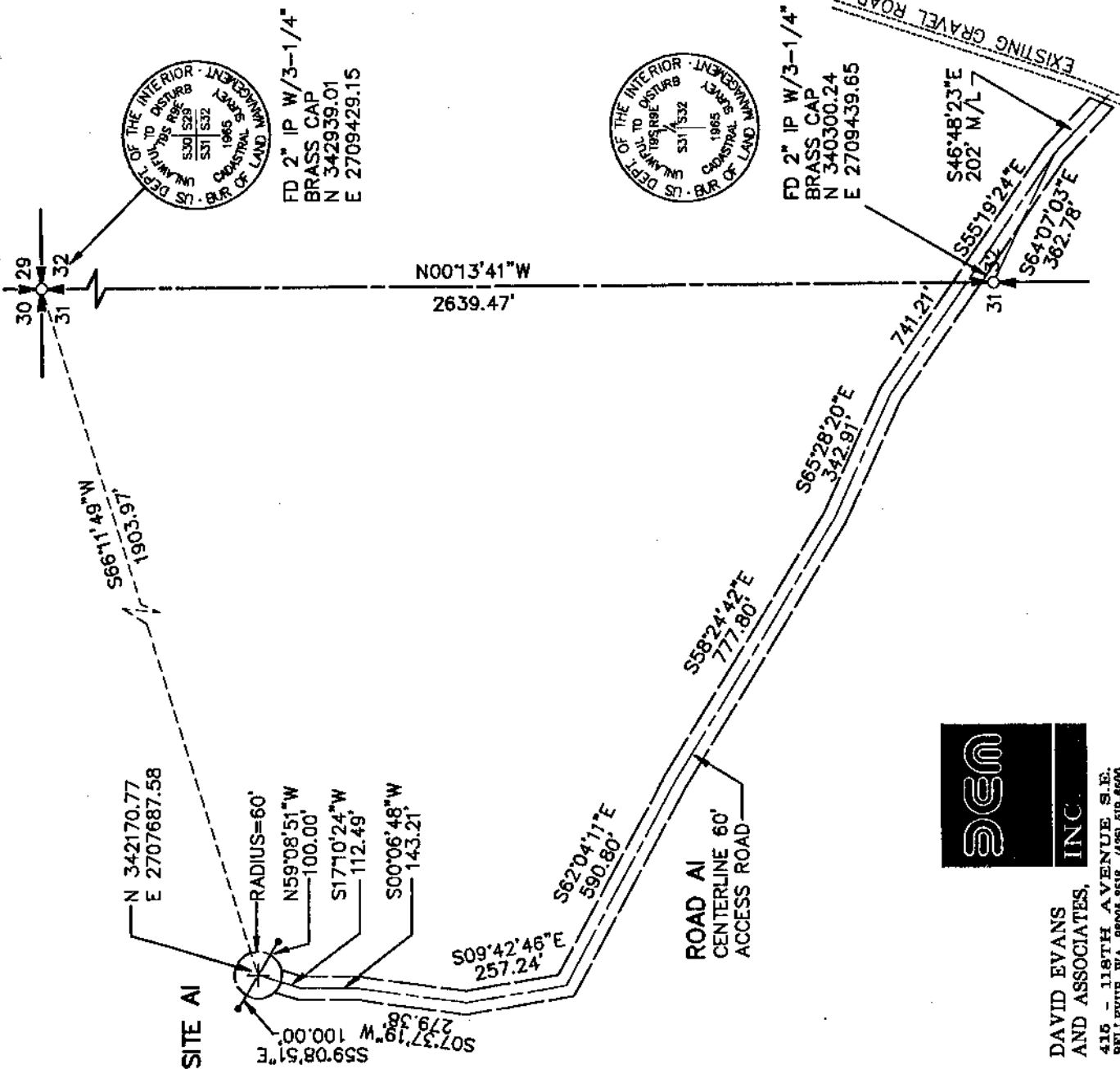
The tract of land to which this description applies contains 4.63 acres, more or less.



N.E. 1/4, SEC. 31, W. 1/2, SEC. 32, TWP. 9 S., RNG. 9 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO

SITE AI

JULY 8, 1998



# LEGEND

- SET 5/8" x 30" IRON ROD W/ YELLOW PLASTIC CAP STAMPED "DEA INC." AS REFERENCE.

M/L MORE OR LESS  
SEC. SECTION  
TWP. TOWNSHIP  
RNG. RANGE  
FD FOUND  
IP IRON PIPE

# NOTES

- COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
- DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999746.



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Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 6-30-98  
DEA Job No. COEX0302

## LEGAL DESCRIPTION AJ

### Site AJ

A tract of land lying in the southeast one-quarter of Section 36, Township 10 South, Range 9 East of the Boise Meridian, Owyhee County, Idaho, more particularly described as follows:

A circular tract of land of radius 60.00 feet, the center of which bears North 54° 15' 38" West a distance of 169.09 feet from the southeast corner of Section 36, Township 10 South, Range 9 East, Boise Meridian.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999746.

The tract of land to which this description applies contains 0.260 acres, more or less.



**LEGAL DESCRIPTION- Continued**  
**AJ**

**Road AJ**

A 60-foot wide strip of land lying in the southeast one-quarter of Section 36, Township 10 South, Range 9 East of the Boise Meridian, Owyhee County, Idaho, being 30.00 feet on each side of the following described centerline.

Beginning at a point which bears North 54° 15' 38" West a distance of 169.09 feet from the southeast corner of Section 36, Township 10 South, Range 9 East, Boise Meridian; thence North 32° 15' 00" East a distance of 50.00 feet; thence North 57° 45' 00" West a distance of 697.65 feet to a point of curvature; thence along the arc of a 300.00 foot radius curve to the right, through a central angle of 43° 37' 53", an arc distance of 228.45 feet (the long chord bears North 35° 56' 04" West a distance of 222.97 feet) to a point of tangency; thence North 14° 07' 07" West a distance of 237.09 feet; thence North 38° 35' 56" West a distance of 843.88 feet; thence North 67° 11' 45" West a distance of 76.62 feet to a terminus point in an existing road, said terminus point bears South 55° 03' 40" West a distance of 1,789.98 feet from the east quarter-section corner of said Section 36.

EXCEPTING THEREFROM Site AJ, being a 60-foot-radius circular tract centered on the point of beginning of the above centerline description, and the right-of-way, if any, of said existing road.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999746.

The tract of land to which this description applies contains 2.81 acres, more or less.



# **SITE AJ**

S.E. 1/4, SEC. 36, TWP. 10 S., RNG. 9 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO  
JUNE 30, 1998

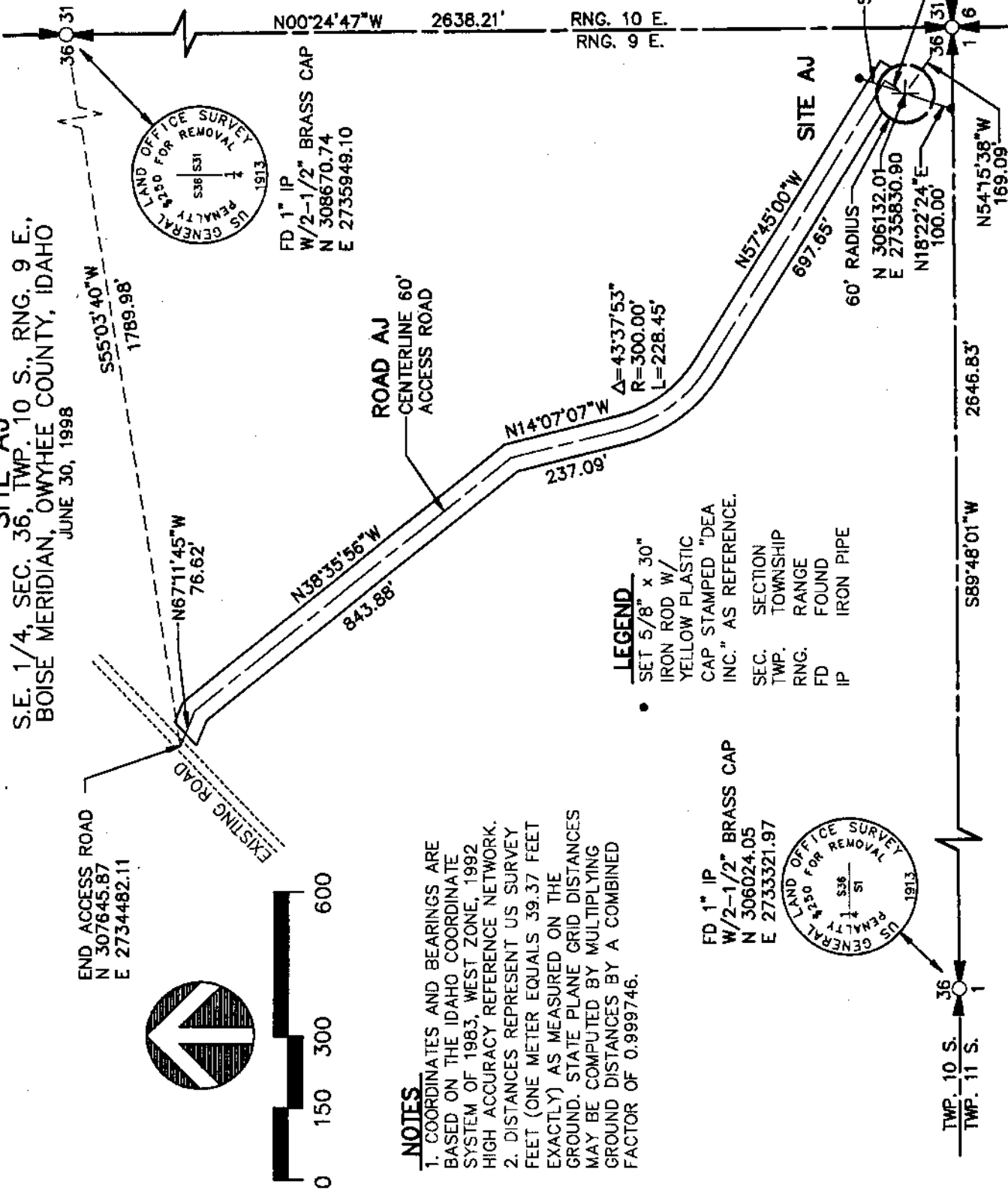
END ACCESS ROAD  
N 307645.87  
E 2734482.11



## **NOTES**

1. COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
2. DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999746.

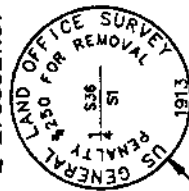
**ROAD AJ**  
CENTERLINE 60'  
ACCESS ROAD



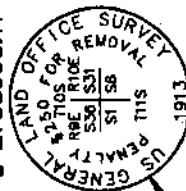
## **LEGEND**

- SET 5/8" x 30" IRON ROD W/ YELLOW PLASTIC CAP STAMPED "DEA INC." AS REFERENCE.
- SEC. SECTION
- TWP. TOWNSHIP
- RNG. RANGE
- FD. FOUND
- IP. IRON PIPE

FD 1" IP  
W/2-1/2" BRASS CAP  
N 306024.05  
E 2733321.97



FD 2-1/2" IP  
W/3-1/2" BRASS CAP  
N 306033.26  
E 2735968.11



TWP. 10 S.  
TWP. 11 S.

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Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 6-30-98  
DEA Job No. COEX0302

**LEGAL DESCRIPTION  
AK**

**Site AK**

A tract of land lying in the southeast one-quarter of Section 8, Township 9 South, Range 6 East of the Boise Meridian, Owyhee County, Idaho, more particularly described as follows:

A circular tract of land of radius 60.00 feet, the center of which bears North 83° 56' 43" West a distance of 735.92 feet from the southeast corner of Section 8, Township 9 South, Range 6 East, Boise Meridian.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999760.

The tract of land to which this description applies contains 0.260 acres, more or less.



## EXHIBIT A- Continued AK

### Road AK

A 60-foot wide strip of land lying in the southeast one-quarter of Section 8, the northeast and northwest one-quarters of Section 17, and the northeast one-quarter of Section 18, Township 9 South, Range 6 East of the Boise Meridian, Owyhee County, Idaho, being 30.00 feet on each side of the following described centerline.

Beginning at a point which bears North  $83^{\circ} 56' 43''$  West a distance of 735.92 feet from the southeast corner of Section 8, Township 9 South, Range 6 East, Boise Meridian; thence South  $3^{\circ} 22' 25''$  West a distance of 66.83 feet; thence South  $88^{\circ} 10' 23''$  West a distance of 573.91 feet; thence along the arc of a 565.00 foot radius curve to the left, through a central angle of  $28^{\circ} 48' 28''$ , an arc distance of 284.08 feet (the long chord bears South  $73^{\circ} 46' 09''$  West a distance of 281.09 feet) to a point of tangency; thence South  $59^{\circ} 21' 55''$  West a distance of 138.42 feet; thence along the arc of a 350.00 foot radius curve to the right, through a central angle of  $17^{\circ} 25' 46''$ , an arc distance of 106.47 feet (the long chord bears South  $68^{\circ} 04' 48''$  West a distance of 106.06 feet) to a point of tangency; thence South  $76^{\circ} 47' 41''$  West a distance of 869.19 feet; thence North  $85^{\circ} 37' 05''$  West a distance of 190.97 feet; thence along the arc of a 100.00 foot radius curve to the left, through a central angle of  $62^{\circ} 45' 22''$ , an arc distance of 109.53 feet (the long chord bears South  $63^{\circ} 00' 14''$  West a distance of 104.14 feet) to a point of tangency; thence South  $31^{\circ} 37' 33''$  West a distance of 164.94 feet; thence South  $53^{\circ} 38' 59''$  West a distance of 95.03 feet; thence along the arc of a 110.00 foot radius curve to the right, through a central angle of  $58^{\circ} 31' 52''$ , an arc distance of 112.37 feet (the long chord bears South  $82^{\circ} 54' 54''$  West a distance of 107.55 feet) to a point of tangency; thence North  $67^{\circ} 49' 10''$  West a distance of 65.50 feet; thence North  $86^{\circ} 24' 15''$  West a distance of 255.25 feet; thence along the arc of a 190.00 foot radius curve to the right, through a central angle of  $42^{\circ} 47' 13''$ , an arc distance of 141.89 feet (the long chord bears North  $65^{\circ} 00' 38''$  West a distance of 138.61 feet) to a point of reverse curvature; thence along the arc of a 400.00 foot radius curve to the left, through a central angle of  $40^{\circ} 31' 03''$ , an arc distance of 282.86 feet (the long chord bears North  $63^{\circ} 52' 33''$  West a distance of 277.01 feet) to a point of tangency; thence North  $84^{\circ} 08' 05''$  West a distance of 280.57 feet; thence along the arc of a 200.00 foot radius curve to the left, through a central angle of  $35^{\circ} 43' 06''$ , an arc distance of 124.68 feet (the long chord bears South  $78^{\circ} 00' 22''$  West a distance of 122.67 feet) to a point of tangency; thence South  $60^{\circ} 08' 49''$  West a distance of 51.07 feet; thence along the arc of a 150.00 foot radius curve to the right, through a central angle of  $43^{\circ} 05' 03''$ , an arc distance of 112.79 feet (the long chord bears South  $81^{\circ} 41' 21''$  West a distance of 110.16 feet) to a point of tangency; thence North  $76^{\circ} 46' 08''$  West a distance of 358.28 feet; thence North  $74^{\circ} 32' 06''$  West a distance of 348.59 feet; thence North  $71^{\circ} 23' 01''$  West a distance

# **EXHIBIT A- Continued** **AK**

of 279.87 feet; thence along the arc of a 350.00 foot radius curve to the left, through a central angle of 35° 39' 22", an arc distance of 217.81 feet (the long chord bears North 89° 12' 42" West a distance of 214.31 feet) to a point of tangency; thence South 72° 57' 36" West a distance of 82.49 feet thence along the arc of a 3,500.00 foot radius curve to the right, through a central angle of 11° 00' 39", an arc distance of 672.61 feet (the long chord bears South 78° 27' 56" West a distance of 671.57 feet) to a point of tangency; thence South 83° 58' 15" West a distance of 248.76 feet; thence South 76° 38' 48" West a distance of 142.15 feet; to a terminus point in an existing road, said terminus point bears South 84° 15' 39" West a distance of 4,114.70 feet from the north quarter-section corner of Section 17, Township 9 South, Range 6 East, Boise Meridian.

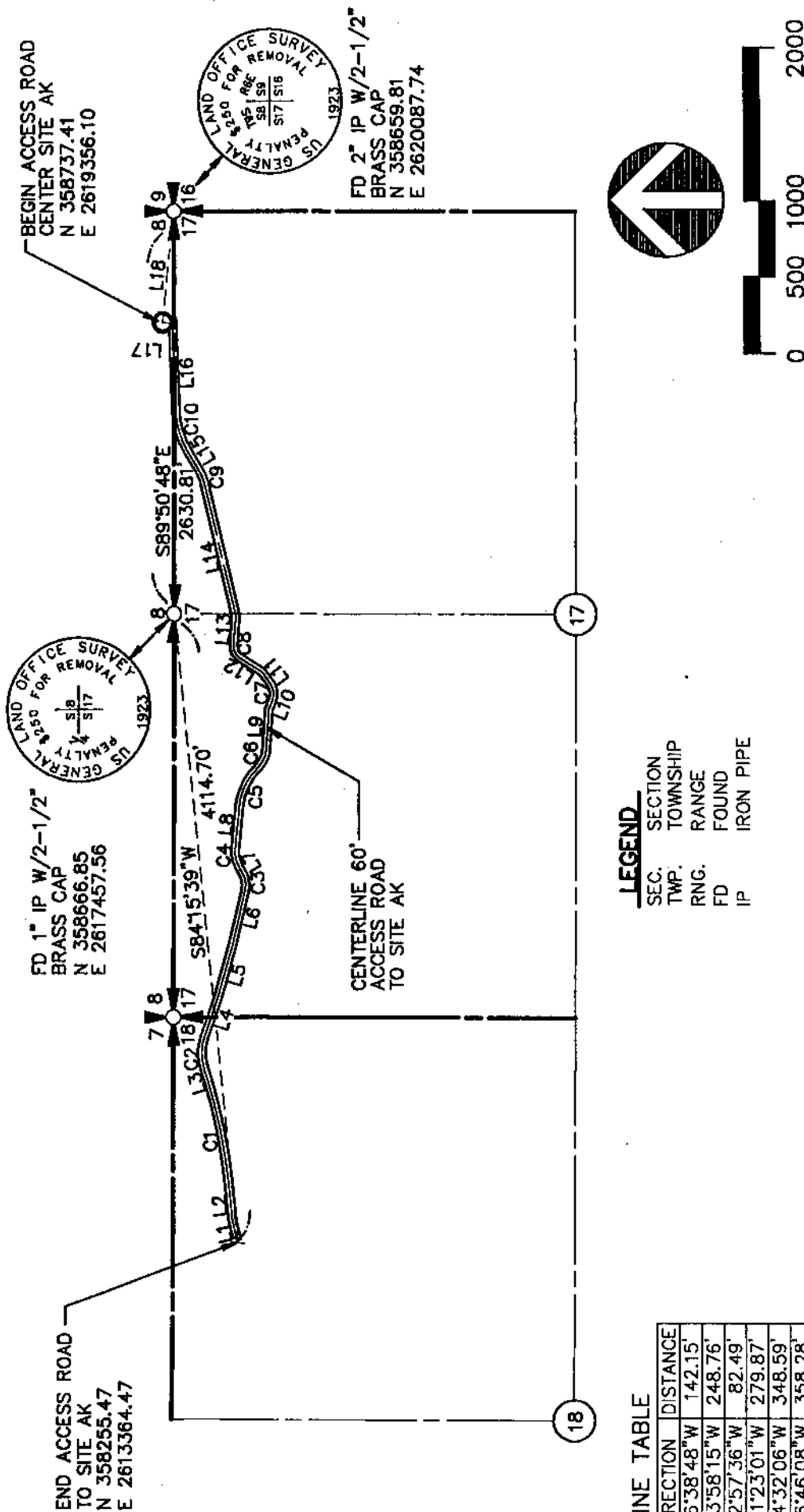
EXCEPTING THEREFROM Site AK, being a 60-foot-radius circular tract centered on the point of beginning of the above centerline description, and the existing right-of-way of said existing road, if any.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999760.

The tract of land to which this description applies contains 8.67 acres, more or less.



# S.E. 1/4 SEC. 8, N.E. AND N.W. 1/4 SEC. 17, N.E. 1/4 SEC. 18, TWP. 9 S., RNG. 6 E., BOISE MERIDIAN, OWYHEE COUNTY, IDAHO JUNE 30, 1998



## LEGEND

SEC.	SECTION
TWP.	TOWNSHIP
RNG.	RANGE
FD	FOUND
IP	IRON PIPE

## NOTES

- COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
- DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999760.

## CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA
C1	3500.00'	672.61'	11°00'39"
C2	3500.00'	217.81'	35°39'22"
C3	150.00'	112.79'	43°05'03"
C4	200.00'	124.68'	35°43'06"
C5	400.00'	282.86'	40°31'03"
C6	190.00'	141.89'	42°47'13"
C7	110.00'	112.37'	58°31'52"
C8	100.00'	109.53'	62°45'22"
C9	350.00'	106.47'	17°25'46"
C10	565.00'	284.08'	28°48'28"

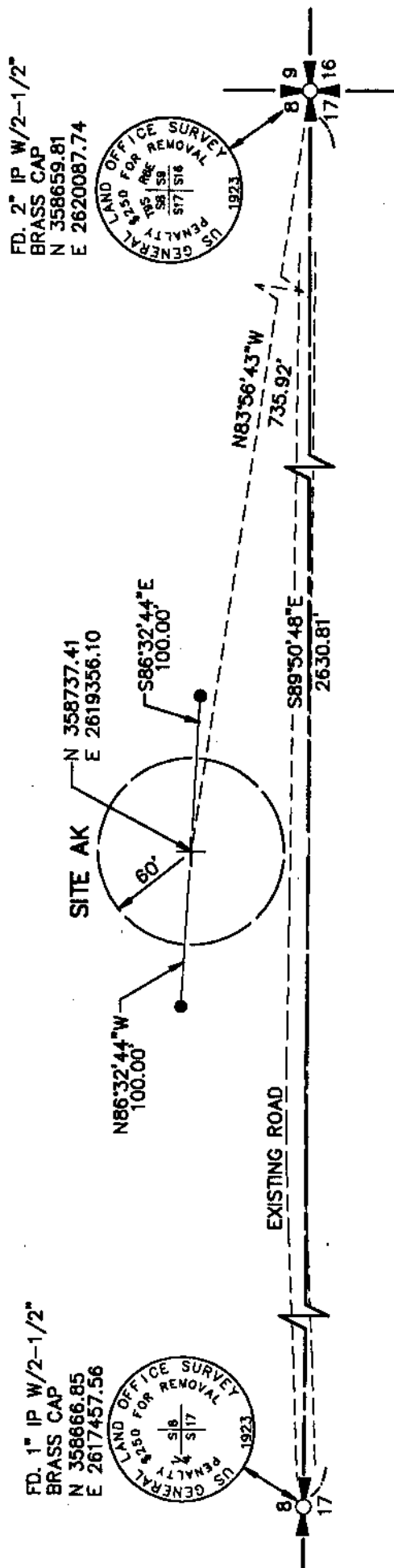
## LINE TABLE

LINE	DIRECTION	DISTANCE
L1	S76°38'48"W	142.15'
L2	S83°58'15"W	248.76'
L3	S72°57'36"W	82.49'
L4	N71°23'01"W	279.87'
L5	N74°32'06"W	348.59'
L6	N76°46'08"W	358.28'
L7	S60°08'49"W	51.07'
L8	N84°08'05"W	280.57'
L9	N86°24'15"W	255.25'
L10	N67°49'10"W	65.50'
L11	S53°38'59"W	95.03'
L12	S31°37'33"W	164.94'
L13	N85°37'05"W	190.97'
L14	S76°47'41"W	869.19'
L15	S59°21'55"W	138.42'
L16	S88°10'23"W	573.91'
L17	S03°22'25"W	66.83'
L18	N83°56'43"W	735.92'

DAVID EVANS  
AND ASSOCIATES, INC.  
415 - 118TH AVENUE S.E.  
BELLEVUE, WA. 98005-8518 (425) 519-6500

S.E. 1/4, SEC. 8, TWP. 9 S., RNG. 6 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, ID  
JULY 8, 1998

SITE AK



**LEGEND**

- SET 5/8" x 30" IRON ROD W/ YELLOW PLASTIC CAP STAMPED "DEA INC." AS REFERENCE.

SEC. SECTION  
TWP. TOWNSHIP  
RNG. RANGE  
FD. FOUND

**NOTES**

- COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
- DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999760.

deem

DAVID EVANS  
AND ASSOCIATES, INC.

415 - 118TH AVENUE S.E.  
BELLEVUE, WA. 98006-3618 (425) 619-6600





DAVID EVANS AND ASSOCIATES, INC.

415-118th Avenue S.E.

Bellevue, Washington 98005

Tel: 206.455.3571

Fax: 206.455.3061

Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 7-8-98  
DEA Job No. COEX0302

## LEGAL DESCRIPTION AM

### Site AM

A tract of land lying in the southeast one-quarter of Section 24, Township 11 South, Range 5 East of the Boise Meridian, Owyhee County, Idaho, more particularly described as follows:

A circular tract of land of radius 60.00 feet, the center of which bears North 14° 36' 59" West a distance of 612.79 feet from the southeast corner of Section 24, Township 11 South, Range 5 East, Boise Meridian.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999706.

The parcel of tract to which this description applies contains 0.260 acres, more or less.



## **LEGAL DESCRIPTION- Continued AM**

### **Road AM, New**

A 60-foot wide strip of land lying in the southeast one-quarter of Section 24, Township 11 South, Range 5 East of the Boise Meridian, Owyhee County, Idaho, being 30.00 feet on each side of the following described centerline.

Beginning at a point that bears North 14° 36' 59" West a distance of 612.79 feet from the southeast corner of Section 24, Township 11 South, Range 5 East, Boise Meridian; thence South 87° 35' 15" West a distance of 62.64 feet; thence South 2° 24' 45" East a distance of 293.47 feet to a terminus point in an existing road, said terminus point bears North 34° 35' 17" West a distance of 360.89 feet from said southeast corner of Section 24.

The sidelines of said strip of land are to be extended or shortened to begin on the westerly boundary of Site AM, being a 60-foot-radius circular tract centered on the point of beginning of the above centerline description and end on the northerly right-of-way line, if any, of said existing road.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999706.

The parcel of tract to which this description applies contains 0.41 acres, more or less.



## LEGAL DESCRIPTION- Continued AM

### Road AM, Improvement

A 60-foot wide strip of land lying in the southeast one-quarter of Section 24, the northeast and northwest one-quarters of Section 25, the northeast and northwest one-quarters of Section 26, the northeast, northwest, and southwest one-quarters of Section 27, the southeast and southwest one-quarters of Section 28, and the southeast one-quarter of Section 29, Township 11 South, Range 5 East of the Boise Meridian, Owyhee County, Idaho, being 30.00 feet on each side of the following described centerline.

Beginning at a point that bears North 34° 35' 17" West a distance of 360.89 feet from the southeast corner of Section 24, Township 11 South, Range 5 East, Boise Meridian, being a point in an existing road and the terminus point of Road AM, New as described above; thence generally along the existing road South 76° 11' 12" West a distance of 74.11 feet to a point of curvature; thence along the arc of a 500.00 foot radius curve to the left, through a central angle of 31° 26' 43", an arc distance of 274.41 feet (the long chord bears South 60° 27' 51" West a distance of 270.98 feet) to a point of tangency; thence South 44° 44' 29" West a distance of 269.79 feet; thence South 57° 17' 05" West a distance of 184.91 feet; thence South 37° 16' 09" West a distance of 199.23 feet; thence South 55° 06' 08" West a distance of 288.23 feet; thence South 37° 12' 03" West a distance of 267.86 feet; thence South 61° 45' 22" West a distance of 181.42 feet to a point of curvature; thence along the arc of a 3,000.00 foot radius curve to the right, through a central angle of 21° 41' 27", an arc distance of 1,135.73 feet (the long chord bears South 72° 36' 05" West a distance of 1,128.96 feet) to a point of tangency; thence South 83° 26' 49" West a distance of 747.89 feet; thence North 85° 03' 17" West a distance of 221.47 feet to a point of curvature; thence along the arc of a 6,400.00 foot radius curve to the left, through a central angle of 23° 16' 33", an arc distance of 2,599.92 feet (the long chord bears South 83° 18' 27" West a distance of 2,582.08 feet) to a point of tangency; thence South 71° 40' 11" West a distance of 1,100.36 feet; thence South 79° 00' 34" West a distance of 1,558.30 feet; thence North 85° 48' 10" West a distance of 320.74 feet; thence North 67° 16' 08" West a distance of 349.26 feet; thence South 89° 04' 00" West a distance of 2,558.71 feet; thence South 87° 04' 15" West a distance of 1,694.83 feet; thence South 69° 47' 50" West a distance of 784.09 feet; thence South 56° 56' 30" West a distance of 236.14 feet; thence South 67° 04' 47" West a distance of 429.88 feet; thence South 70° 17' 49" West a distance of 614.87 feet; thence South 72° 52' 27" West a distance of 232.35 feet; thence South 69° 48' 53" West a distance of 1,057.16 feet; thence South 74° 43' 34" West a distance of 1,068.74 feet to a point of curvature; thence along the arc of a 1,500.00 foot radius curve to the right, through a central angle of 28° 04' 35", an arc distance of



**LEGAL DESCRIPTION- Continued**  
**AM**

735.04 feet (the long chord bears South 88° 45' 52" West a distance of 727.71 feet) to a point of tangency; thence North 77° 11' 50" West a distance of 914.48 feet; thence North 73° 14' 09" West a distance of 1,697.45 feet to a point of curvature; thence along the arc of a 800.00 foot radius curve to the left, through a central angle of 24° 00' 36", an arc distance of 335.24 feet (the long chord bears North 85° 14' 26" West a distance of 332.79 feet) to a point of tangency; thence South 82° 45' 16" West a distance of 425.77 feet to a terminus point in Idaho State Highway 51, said terminus point bears South 13° 36' 34" East a distance of 8,482.89 feet from the north quarter-section corner of Section 20, Township 11 South, Range 5 East, Boise Meridian.

The sidelines of said strip of land are to be extended or shortened to begin on the extended or shortened lines of Road AM, New as described herein and end on the easterly right-of-way line of Idaho State Highway 51.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999706.

The parcel of tract to which this description applies contains 30.80 acres, more or less.



o:\projSAFE\c\coex0302\legals\coex-am.rv1



#### LEGEND

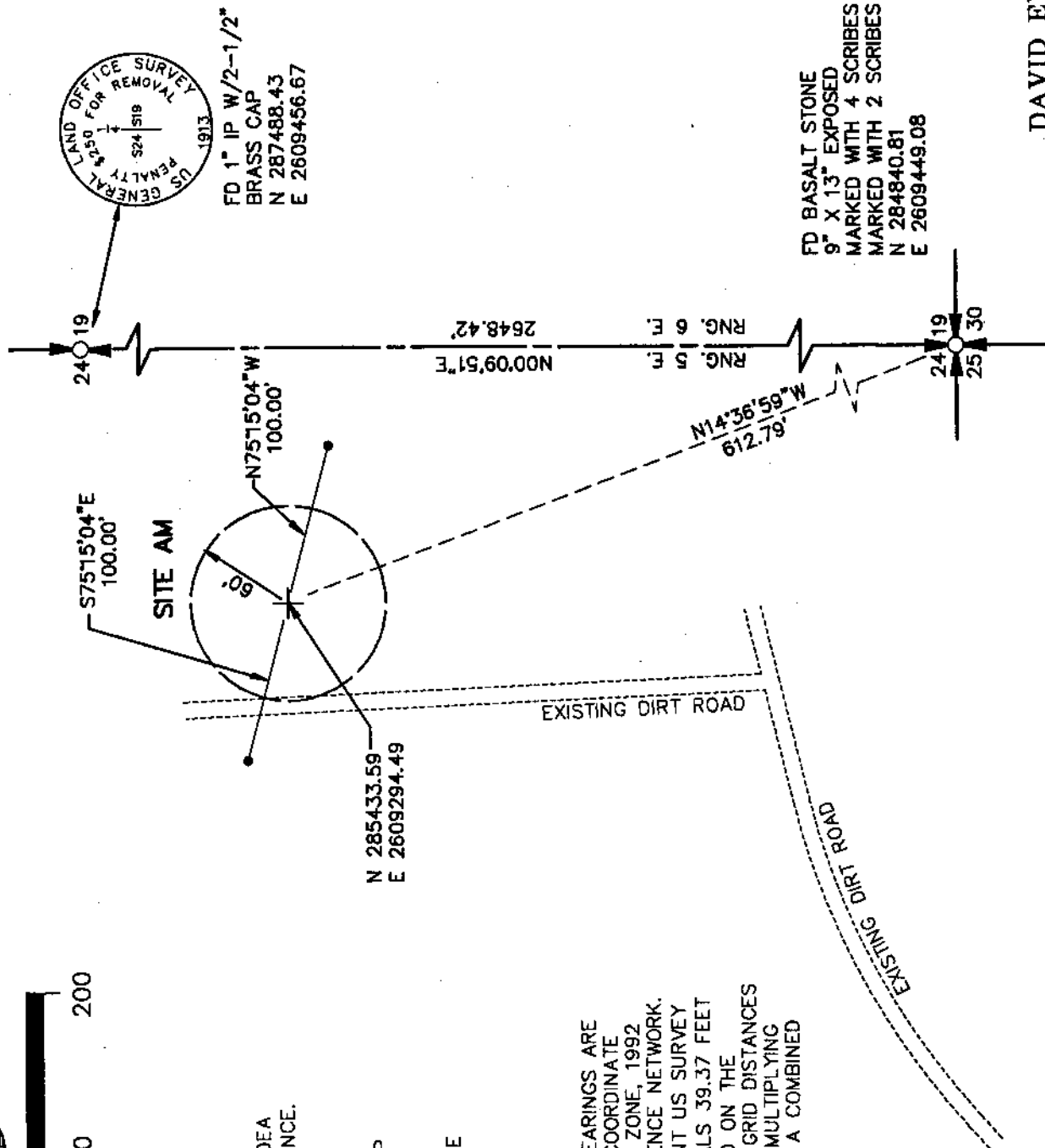
- SET 5/8" x 30" IRON ROD W/ YELLOW PLASTIC CAP STAMPED "DEA INC." AS REFERENCE.

SEC. SECTION  
TWP. TOWNSHIP  
RNG. RANGE  
FD FOUND  
IP IRON PIPE

#### NOTES

1. COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
2. DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999706.

SITE AM  
S.E. 1/4, SEC. 24, TWP. 11 S., RNG. 5 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO  
JULY 8, 1998



FD BASALT STONE  
9" X 13" EXPOSED  
MARKED WITH 4 SCRIBES ON NORTH SIDE  
MARKED WITH 2 SCRIBES ON SOUTH SIDE  
N 284840.81  
E 2609449.08

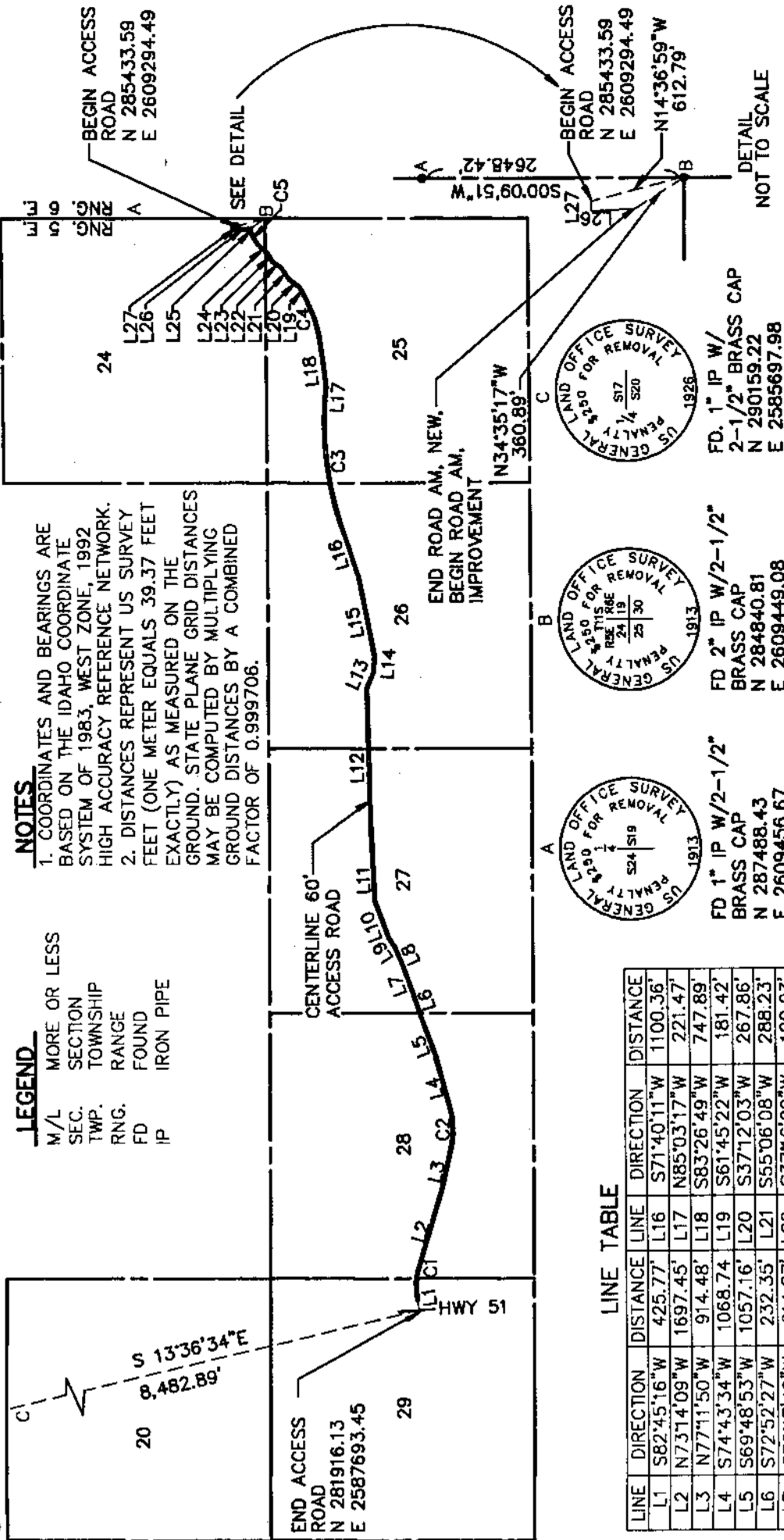


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BELLEVUE, WA. 98005-3518 (425) 519-6500



ACCESS ROAD TO SITE AM  
SEC. 24, 25, 26, 27, 28, AND 29 TWP. 11 S., RNG. 5 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO  
JULY 8, 1998



**LEGEND**

M/L MORE OR LESS  
SEC. SECTION  
TWP. TOWNSHIP  
RNG. RANGE  
FD FOUND  
IP IRON PIPE

**NOTES**

- COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
- DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999706.

**LINE TABLE**

LINE	DIRECTION	DISTANCE	LINE	DIRECTION	DISTANCE
L1	S82°45'16"W	425.77'	L16	S71°40'11"W	1100.36'
L2	N73°14'09"W	1697.45'	L17	N85°03'17"W	221.47'
L3	N77°11'50"W	914.48'	L18	S83°26'49"W	747.89'
L4	S74°43'34"W	1068.74'	L19	S61°45'22"W	181.42'
L5	S69°48'53"W	1057.16'	L20	S37°12'03"W	267.86'
L6	S72°52'27"W	232.35'	L21	S55°06'08"W	288.23'
L7	S70°17'49"W	614.87'	L22	S37°16'09"W	199.23'
L8	S67°04'47"W	429.88'	L23	S57°17'05"W	184.91'
L9	S56°56'30"W	236.14'	L24	S44°44'29"W	269.79'
L10	S69°47'50"W	784.09'	L25	S76°11'12"W	74.11'
L11	S87°04'15"W	1694.83'	L26	S02°24'45"E	293.47'
L12	S89°04'00"W	2558.71'	L27	S87°35'15"W	62.64'
L13	N67°16'08"W	349.26'			
L14	N85°48'10"W	320.74'			
L15	S79°00'34"W	1558.30'			

**CURVE TABLE**

CURVE	RADIUS	LENGTH	DELTA
C1	800.00'	335.24'	24°00'36"
C2	1500.00'	735.04'	28°04'35"
C3	6400.00'	2599.92'	23°16'33"
C4	3000.00'	1135.73'	21°41'27"
C5	500.00'	274.41'	31°26'43"



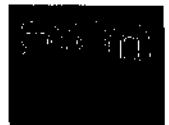
FD 1" IP W/2-1/2" BRASS CAP  
N 287488.43  
E 2609456.67

FD 2" IP W/2-1/2" BRASS CAP  
N 284840.81  
E 2609449.08

FD 1" IP W/2-1/2" BRASS CAP  
N 290159.22  
E 2585697.98

DETAIL  
NOT TO SCALE

**DAVID EVANS  
AND ASSOCIATES, INC.**  
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**DAVID EVANS AND ASSOCIATES, INC.**

415-118th Avenue S.E.

Bellevue, Washington 98005

Tel: 206.455.3571

Fax: 206.455.3061

Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 6-30-98  
DEA Job No. COEX0302

**LEGAL DESCRIPTION  
AN**

**Site AN**

A tract of land lying in the northwest one-quarter of Section 8, Township 11 South, Range 5 East of the Boise Meridian, Owyhee County, Idaho, more particularly described as follows:

A circular tract of land of radius 60.00 feet, the center of which bears South 7° 38' 09" West a distance of 1,276.95 feet from the north quarter-section corner of Section 8, Township 11 South, Range 5 East, Boise Meridian.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999700.

The tract of land to which this description applies contains 0.260 acres, more or less.



**LEGAL DESCRIPTION- Continued  
AN**

**Road AN**

A 60-foot wide strip of land lying in the northwest, northeast, and southeast one-quarters of Section 8, Township 11 South, Range 5 East of the Boise Meridian, Owyhee County, Idaho, being 30.00 feet on each side of the following described centerline.

Beginning at a point which bears South 7° 38' 09" West a distance of 1,276.95 feet from the north quarter-section corner of Section 8, Township 11 South, Range 5 East, Boise Meridian; thence South 20° 58' 05" East a distance of 164.93 feet; thence South 14° 16' 52" East a distance of 365.57 feet; thence South 15° 25' 29" East a distance of 265.35 feet; thence South 5° 00' 24" East a distance of 708.32 feet; thence North 81° 22' 32" East a distance of 500 feet, more or less, to the westerly right-of-way line of Idaho State Highway 51.

The sidelines of said strip of land are to be extended or shortened to begin at the boundary of Site AN, being a 60-foot-radius circular tract centered on the point of beginning of the above centerline description, and end on the westerly right-of-way line of Idaho State Highway 51.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999700.

The tract of land to which this description applies contains 2.68 acres, more or less.



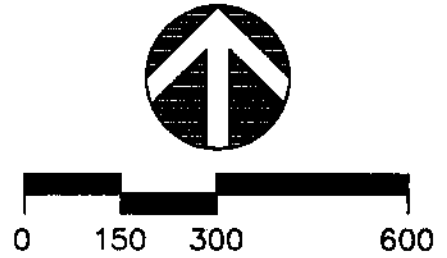
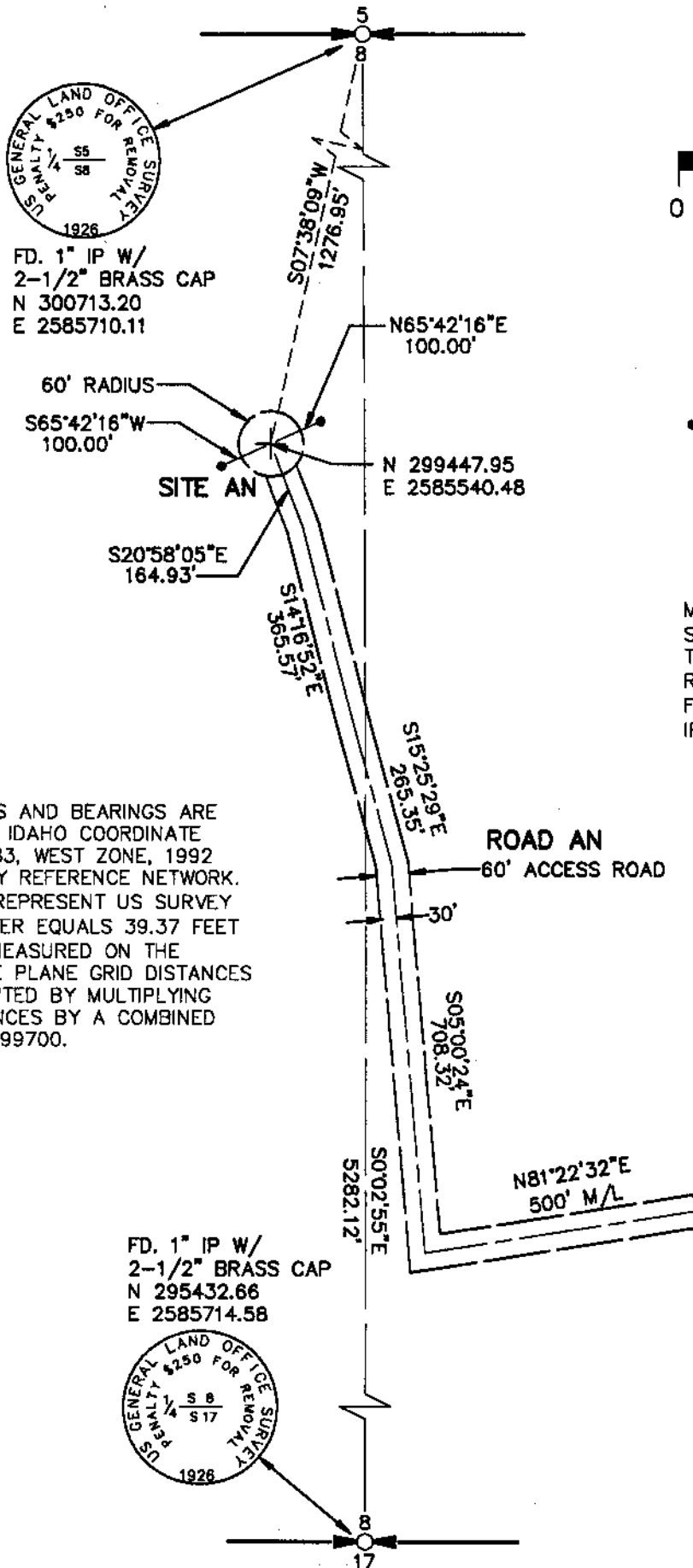
o:\projSAFE\c\coex0302\legals\coex-an.leg



# SITE AN

N.W. 1/4, N.E. 1/4 AND S.E. 1/4 SEC. 8, TWP. 11 S., RNG. 5 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO

JUNE 30, 1998



## LEGEND

- SET 5/8" x 30" IRON ROD W/ YELLOW PLASTIC CAP STAMPED "DEA INC." AS REFERENCE.

M/L MORE OR LESS  
SEC. SECTION  
TWP. TOWNSHIP  
RNG. RANGE  
FD FOUND  
IP IRON PIPE

## NOTES

1. COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
2. DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999700.

DAVID EVANS  
AND ASSOCIATES, INC.

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BELLEVUE, WA. 98005-3618 (425) 519-6500



STATE ROUTE 51



DAVID EVANS AND ASSOCIATES, INC.

415-118th Avenue S.E.

Bellevue, Washington 98005

Tel: 206.455.3571

Fax: 206.455.3061

Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 6-30-98  
DEA Job No. COEX0302

## LEGAL DESCRIPTION AO

### Site AO

A tract of land lying in the northeast one-quarter of Section 17, Township 10 South, Range 5 East of the Boise Meridian, Owyhee County, Idaho, more particularly described as follows:

A circular tract of land of radius 60.00 feet, the center of which bears North 86° 14' 40" West a distance of 2,001.59 feet from the east quarter-section corner of Section 17, Township 10 South, Range 5 East, Boise Meridian.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999715.

The tract of land to which this description applies contains 0.260 acres, more or less.

### Road AO, New

A 60-foot wide strip of land lying in the northeast and southeast one-quarters of Section 17, Township 10 South, Range 5 East of the Boise Meridian, Owyhee County, Idaho, being 30.00 feet on each side of the following described centerline.



## **LEGAL DESCRIPTION- Continued AO**

Beginning at a point which bears North  $86^{\circ} 14' 40''$  West a distance of 2,001.59 feet from the east quarter-section corner corner of Section 17, Township 10 South, Range 5 East, Boise Meridian; thence South  $41^{\circ} 32' 47''$  East a distance of 526.51 feet; thence South  $37^{\circ} 29' 27''$  East a distance of 224.90 feet; thence South  $56^{\circ} 49' 17''$  East a distance of 449.37 feet to a terminus point in an existing road, said terminus point bears South  $58^{\circ} 48' 19''$  West a distance of 1,326.97 feet from the east quarter-section corner of said Section 17.

EXCEPTING THEREFROM Site AO, being a 60-foot-radius circular tract centered on the point of beginning of the above centerline description, and the right-of-way, if any, of said existing road.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999715.

The tract of land to which this description applies contains 1.57 acres, more or less.

### **Road AO, Improvement**

A 60-foot wide strip of land lying in the southeast and southwest one-quarters of Section 17, Township 10 South, Range 5 East of the Boise Meridian, Owyhee County, Idaho, being 30.00 feet on each side of the following described centerline.

Beginning at a point which bears South  $58^{\circ} 49' 19''$  West a distance of 1,326.97 feet from the east quarter-section corner of Section 17, Township 10 South, Range 5 East, Boise Meridian; thence generally along an existing road South  $30^{\circ} 50' 24''$  West a distance of 123.23 feet; thence along the arc of a 600.00 foot radius curve to the right, through a central angle of  $44^{\circ} 44' 14''$ , an arc distance of 468.49 feet (the long chord bears South  $53^{\circ} 12' 31''$  West a distance of 456.68 feet) to a point of tangency; thence South  $75^{\circ} 34' 38''$  West a distance of 1,810 feet, more or less, to the easterly right-of-way line of Idaho State Highway 51.

The sidelines of said strip of land are to be extended or shortened to begin on the extended or shortened sidelines of Road AO, New as described herein and end on the easterly right-of-way line of Idaho State Highway 51.



**LEGAL DESCRIPTION- Continued**  
**AO**

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999715.

The tract of land to which this description applies contains 3.31 acres, more or less.





N.E. 1/4, S.E. 1/4, AND S.W. 1/4 SEC. 17, TWP. 10 S., RNG. 5 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO

SITE AO

JUNE 30, 1998



### LEGEND

- SET 5/8" x 30" IRON ROD W/ YELLOW PLASTIC CAP STAMPED "DEA INC." AS REFERENCE.

M/L MORE OR LESS  
SEC. SECTION  
TWP. TOWNSHIP  
RNG. RANGE  
FD FOUND  
IP IRON PIPE

### NOTES

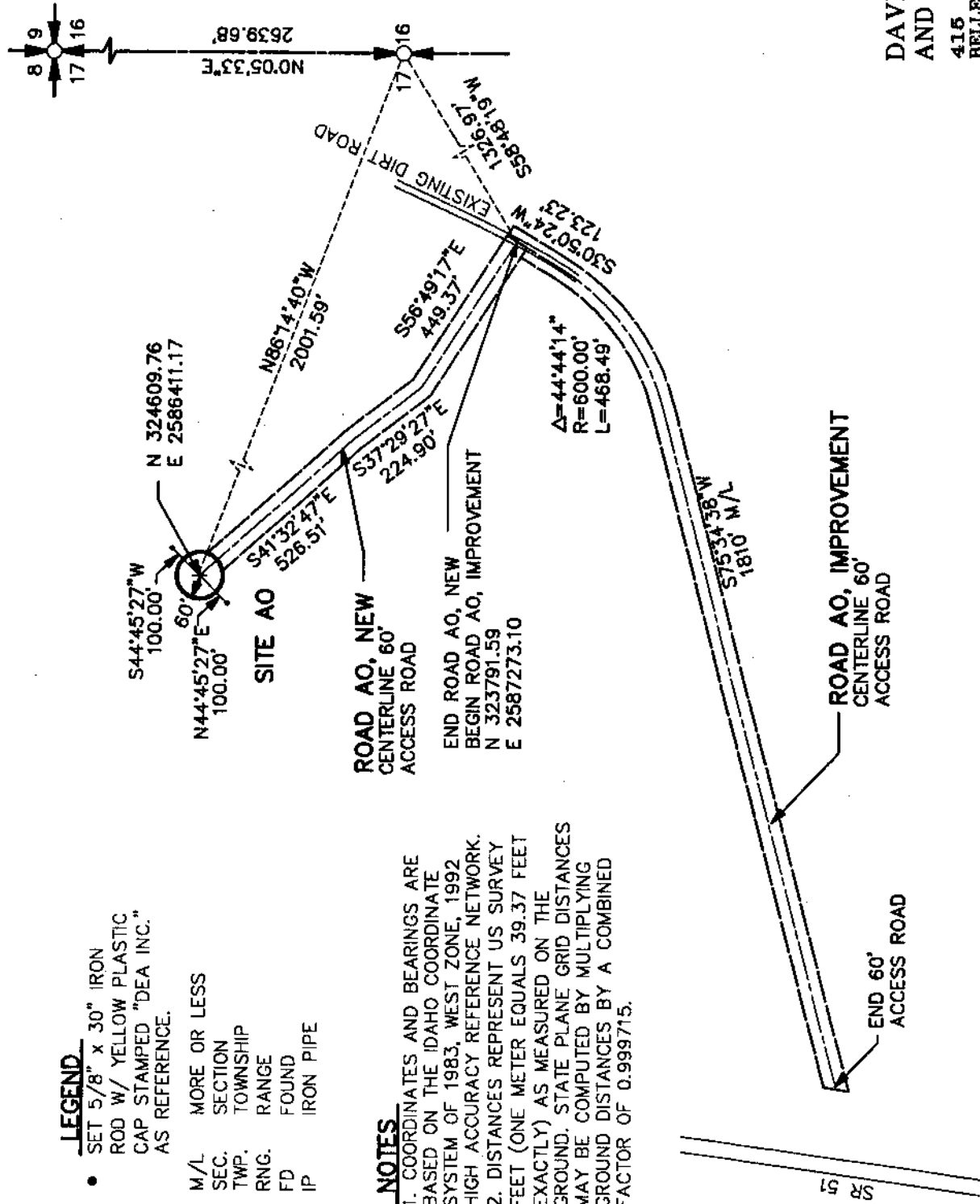
- COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
- DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999715.



FD. 2" IP W/  
2-1/2" BRASS CAP  
N 327117.62  
E 2588412.14



FD. 1" IP W/  
2-1/2" BRASS CAP  
N 324478.69  
E 2588407.88



dean

DAVID EVANS  
AND ASSOCIATES, INC.

415 - 118TH AVENUE S.E.  
BELLEVUE, WA. 98005-3518 (425) 519-6500

DAVID EVANS AND ASSOCIATES, INC.

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Bellevue, Washington 98005

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Fax: 206.455.3061

Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 6-30-98  
DEA Job No. COEX0302

LEGAL DESCRIPTION  
AP

Site AP

A tract of land lying in the northeast one-quarter of Section 17, Township 11 South, Range 5 East of the Boise Meridian, Owyhee County, Idaho, more particularly described as follows:

A circular tract of land of radius 60.00 feet, the center of which bears South 46° 46' 17" East a distance of 2,140.27 feet from the north quarter-section corner of Section 17, Township 11 South, Range 5 East, Boise Meridian.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999704.

The tract of land to which this description applies contains 0.260 acres, more or less.



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Enhanced Training in Idaho (ETI),  
Mountain Home Air Force Base, Idaho

**Road AP**

A 60-foot wide strip of land lying in the northeast one-quarter of Section 17, Township 11 South, Range 5 East of the Boise Meridian, Owyhee County, Idaho, being 30.00 feet on each side of the following described centerline.

Commencing at the north quarter-section corner of said Section 17, thence south  $46^{\circ}46'17''$  east a distance of 2140.27 feet to the POINT OF BEGINNING; thence south  $03^{\circ}00'00''$  east a distance of 39.10 feet to the beginning of a curve; thence along an arc of a curve to the right, having a radius of 350.00 feet, through a central angle of  $39^{\circ}16'15''$ , and a length of 239.89 feet; thence south  $36^{\circ}16'15''$  west a distance of 231.65' to the beginning of a curve; thence along an arc of a curve to the right, having a radius of 160.00 feet, through a central angle of  $53^{\circ}50'58''$ , and a length of 150.38 feet; thence north  $89^{\circ}52'47''$  west a distance of 127.87 feet more or less, to the TERMINUS of said centerline at the center of an existing road known as State Road 51.

EXCEPTING THEREFROM Site AP, being a 60-foot radius circular tract centered on the point of beginning of the above centerline description, and the existing right-of-way, if any, of said existing road sometimes known as State Road 51.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999692.

The tract of land to which this description applies contains 1.004 acres, more or less.

# SITE AP



● SET 5/8" x 30" IRON  
ROD W/ YELLOW  
PLASTIC CAP  
STAMPED "DEA INC."  
AS REFERENCE.

SEC.	SECTION
TWP.	TOWNSHIP
RNG.	RANGE
FD	FOUND
IP	IRON PIPE

1. COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.

2. DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999704.

FD. 1" IP W/  
2-1/2" BRASS CAP  
N 290159.22  
E 2585697.98

DAVID EVANS  
AND ASSOCIATES

415 - 118TH AVENUE S.E.  
BELLEVUE, WA. 98005-3518 (425) 619-6500





**DAVID EVANS AND ASSOCIATES, INC.**

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Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 7-8-98  
DEA Job No. COEX0302

**LEGAL DESCRIPTION  
AQ**

**Site AQ**

A tract of land lying in the northwest one-quarter of Section 25, Township 13 South, Range 5 East of the Boise Meridian, Owyhee County, Idaho, more particularly described as follows:

A circular tract of land of radius 60.00 feet, the center of which bears South 48° 26' 46" West a distance of 169.98 feet from the north quarter-section corner of Section 25, Township 13 South, Range 5 East, Boise Meridian.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999692.

The tract of land to which this description applies contains 0.260 acres, more or less.



**LEGAL DESCRIPTION- Continued**  
**AQ**

**Road AQ**

A 60-foot wide strip of land lying in the northwest one-quarter of Section 25 and in the southwest and southeast one-quarters of Section 24, Township 13 South, Range 5 East of the Boise Meridian, Owyhee County, Idaho, being 30.00 feet on each side of the following described centerline.

Beginning at a point which bears South 48° 26' 46" West a distance of 169.98 feet from the north quarter-section corner of Section 25, Township 13 South, Range 5 East, Boise Meridian; thence North 30° 51' 28" East a distance of 153.54 feet; thence North 36° 51' 05" East a distance of 281.19 feet; thence North 27° 26' 12" East a distance of 211.05 feet; thence North 68° 11' 18" East a distance of 68.18 feet; thence South 87° 36' 01" East a distance of 190.81 feet; thence North 26° 22' 18" East a distance of 96.72 feet; thence along the arc of a 350.00 foot radius curve to the right, through a central angle of 55° 22' 04", an arc distance of 338.22 feet (the long chord bears North 54° 03' 20" East a distance of 325.21 feet) to a point of tangency; thence North 81° 44' 22" East a distance of 77 feet, more or less, to the center of an existing road sometimes known as Rowland Road.

EXCEPTING THEREFROM Site AQ, being a 60-foot-radius circular tract centered on the point of beginning of the above centerline description, and the existing right-of-way, if any, of said existing road sometimes known as Rowland Road.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999692.

The tract of land to which this description applies contains 1.84 acres, more or less.



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N.W. 1/4, SEC. 25, S. 1/2 SEC. 24, TWP. 13 S., RNG. 5 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO

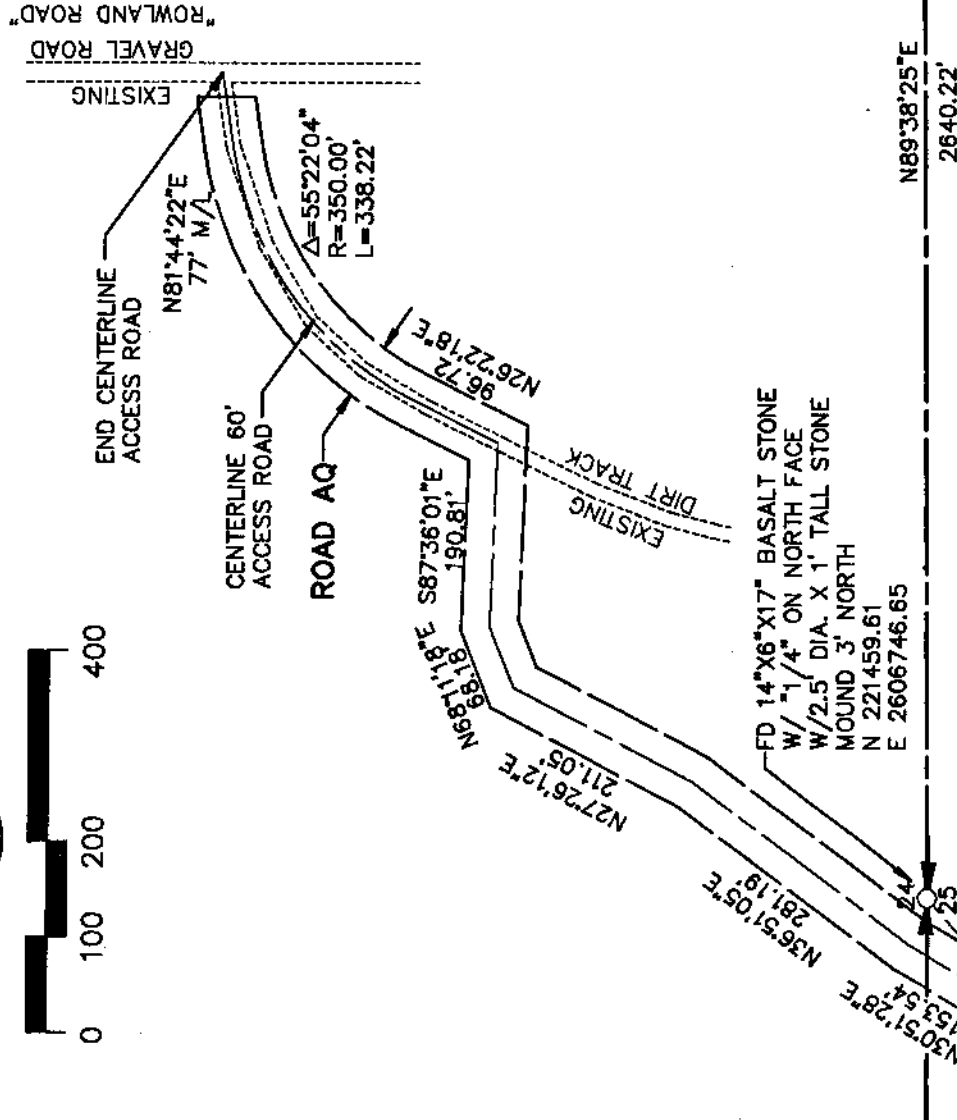
SITE AQ

JULY 8, 1998



DAVID EVANS  
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415- 118TH AVENUE S.E.  
BELLEVUE, WA. 98005-3518 (425) 519-6500



# LEGEND

- SET 5/8" x 30" IRON ROD W/ YELLOW PLASTIC CAP STAMPED "DEA INC." AS REFERENCE.

M/L MORE OR LESS  
SEC. SECTION  
TWP. TOWNSHIP  
RNG. RANGE  
FD FOUND  
IP IRON PIPE  
DIA. DIAMETER

# NOTES

1. COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
2. DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999692.



FD 2-1/2" IP W/3-1/2" BRASS CAP  
N 221476.18  
E 2609386.01

**DAVID EVANS AND ASSOCIATES, INC.**

415-118th Avenue S.E.

Bellevue, Washington 98005

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Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 9-18-98  
DEA Job No. COEX0302

**LEGAL DESCRIPTION  
AT**

**Site AT**

A tract of land lying in the northwest one-quarter of Section 5, Township 9 South, Range 5 East of the Boise Meridian, Owyhee County, Idaho, more particularly described as follows:

A circular tract of land of radius 60.00 feet, the center of which bears North 30° 42' 48" East a distance of 3,224.30 feet from the southwest corner of Section 5, Township 9 South, Range 5 East, Boise Meridian.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999766.

The tract of land to which this description applies contains 0.260 acres, more or less.



**LEGAL DESCRIPTION- Continued**  
**AT**

**Road AT**

A 100-foot wide strip of land lying in the northwest and southwest one-quarters of Section 5, Township 9 South, Range 5 East of the Boise Meridian, Owyhee County, Idaho, being 50.00 feet on each side of the following described centerline.

Beginning at a point which bears North 30° 42' 48" East a distance of 3,224.30 feet from the southwest corner of Section 5, Township 9 South, Range 5 East, Boise Meridian; thence South 29° 47' 34" East a distance of 272.57 feet; thence North 58° 55' 18" East a distance of 144.49 feet; thence North 67° 29' 59" East a distance of 156.61 feet; thence North 12° 13' 47" East a distance of 199.40 feet; thence North 10° 44' 58" East a distance of 398.86 feet; thence North 12° 39' 16" East a distance of 527.54 feet; thence North 15° 41' 38" East a distance of 427.77 feet; to a terminus point in an existing road sometimes known as Missile Base Road, said terminus point bears South 56° 00' 52" East a distance of 2,860.77 feet from the northwest corner of Section 5, Township 9 South, Range 5 East, Boise Meridian.

EXCEPTING THEREFROM Site AT, being a 60-foot-radius circular tract centered on the point of beginning of the above centerline description, and the existing right-of-way, if any, of said existing road sometimes known as Missile Base Road.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999766.

The tract of land to which this description applies contains 4.78 acres, more or less.



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**SITE AT**  
W. 1/2, SEC. 5, TWP. 9 S., RNG. 5 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO

SEPTEMBER 18, 1998



FD 2" IP W/  
2-1/2" BRASS CAP  
N 369828.56  
E 2583225.02

**LEGEND**

- SET 5/8" x 30"  
IRON ROD W/  
YELLOW PLASTIC  
CAP STAMPED "DEA  
INC." AS  
REFERENCE.

SEC. SECTION  
TWP. TOWNSHIP  
RNG. RANGE  
FD FOUND  
IP IRON PIPE

S0°15'44"W 5782.49'  
(87.68 CHAINS = 5786.88')

MISSILE BASE ROAD  
EXISTING ASPHALT ROAD  
S56°00'52"E  
2860.77'

ROAD AT

CENTERLINE  
PROPOSED 100' WIDE  
ROAD EASEMENT

**LINE TABLE**

LINE	DIRECTION	DISTANCE
L1	S29°47'34"E	272.57'
L2	N58°55'18"E	144.49'
L3	N67°29'59"E	156.61'
L4	N12°13'47"E	199.40'
L5	N10°44'58"E	398.86'
L6	N12°39'16"E	527.54'
L7	N15°41'38"E	427.77'
L8	N24°31'47"E	100.00'
L9	S24°31'47"W	100.00'

**NOTES**

1. COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
2. DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999766.

**SITE AT**  
N 366818.87  
E 2584844.96

R=60'  
L9  
L8  
N30°42'48"E  
3224.30'



FD 2" IP W/  
2-1/2" BRASS CAP  
N 364047.48  
E 2583198.56



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Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 9-18-98  
DEA Job No. COEX0302

LEGAL DESCRIPTION  
AU

Site AU

A tract of land lying in the southwest one-quarter of Section 13, Township 13 South, Range 4 East of the Boise Meridian, Owyhee County, Idaho, more particularly described as follows:

Beginning at a point that bears North 23° 49' 00" East a distance of 2,170.81 feet from the southwest corner of Section 13, Township 13 South, Range 4 East, Boise Meridian; thence North 45° 00' 00" West a distance of 150.00 feet; thence North 45° 00' 00" East a distance of 100.00 feet; thence South 45° 00' 00" East a distance of 150.00 feet; thence South 45° 00' 00" West a distance of 100.00 feet to the point of beginning.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999671.

The tract of land to which this description applies contains 0.344 acres, more or less.



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**LEGAL DESCRIPTION**  
**ROAD AU & ND8**

**ROAD AU & ND8**

A parcel of land located in Sections 13 and 14, Township 13 South, Range 4 East, Boise Meridian, Owyhee County, Idaho, said parcel being a strip 60 feet in width, 30 feet on each side of the following described road centerline:

Commencing at the southeast corner of said Section 14; thence north 0°19'13" east along the east line of said Section 14 a distance of 2,461.51 feet; thence West, 1,289.03 feet to the **POINT OF BEGINNING**; thence south 1°50'54" east, 507.54 feet to the beginning of a curve, tangent, concave northeasterly and having a radius of 75.39 feet; thence southeasterly 115.25 feet along said curve through a central angle of 87°35'12"; thence south 89°26'06" east, 566.98 feet; thence north 73°13'29" east, 656.84 feet to a point on the east line of said Section 14, said point being north 0°19'13" east, 2,065.26 feet from the southeast corner of said Section 14; thence continuing north 73°13'29" east, 599.89 feet to the beginning of a curve, tangent, concave southwesterly and having a radius of 75.39 feet; thence southeasterly 83.21 feet along said curve through a central angle of 63°14'27"; thence south 43°32'04" east, 167.30 feet; thence south 44°52'21" east, 150.00 feet, more or less, adjacent to Site AU; thence continuing south 44°52'21" east, a distance of 80 feet; thence (south 0°05'28" west), a distance of (1200 feet), more or less to the **TERMINUS** of said centerline on the north line of Site ND8, said north line lying (792.00 feet) north of the south line of said Site ND8 of which the



southwest corner of said Site is located (north 56°28'11" east), a distance of (1056.04 feet) from the said southeast corner of Section 14.

**EXCEPTING THEREFROM** the SR51 road right-of-way.

Bearings and distances not in parenthesis are referred to the west line of the southwest quarter of said Section 13, Township 13 South, Range 4 East, as shown on Corps of Engineers, Real Estate Maps of White Sands Missile Range, SE-RE-1066, Seg. 48.

Bearings and distances in parenthesis are base on:

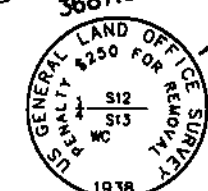
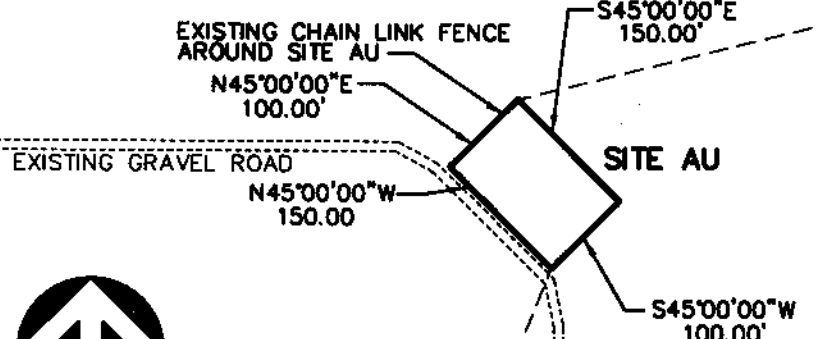
Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999671.

Contains 5.68 acres, more or less.

By: SDM 23 Sep 1998  
Chkd: SM 25 Sep 1998  
Map: Se-Re-174 and 1142  
Cadd: mc\mh\re\pc\eti\mhetind8.dgn  
Doc: 001410.doc  
Rev:  
Key: SDM 23 Sep 1998

**NO-DROP SITE 8 AND SITE AU**  
 S.W. 1/4, SEC. 13, TWP. 13 S., RNG. 4 E.,  
 BOISE MERIDIAN, OWYHEE COUNTY, IDAHO  
 SEPTEMBER 18, 1998

SR 51



FD 1" IP W/2-1/2"  
 BRASS CAP  
 N 232073.30  
 E 2574973.00  
 WITNESS CORNER

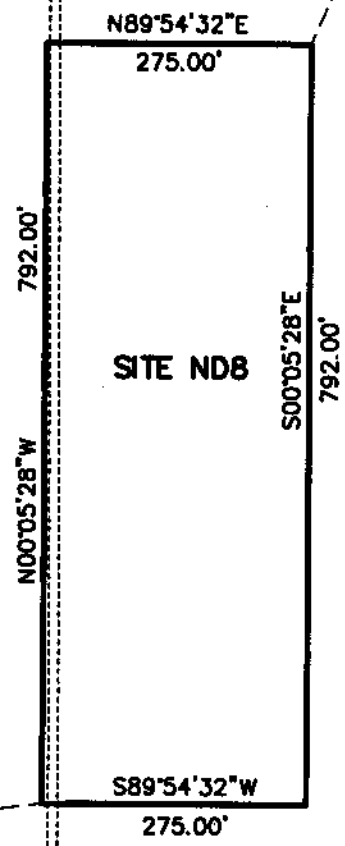


**NOTES**

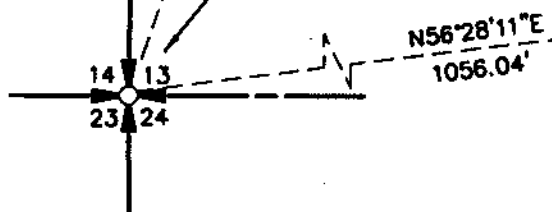
1. COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
2. DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999671.

**LEGEND**

- SET 5/8" x 30" IRON ROD W/ YELLOW PLASTIC CAP STAMPED "DEA INC." AS REFERENCE.
- M/L MORE OR LESS  
 SEC. SECTION  
 TWP. TOWNSHIP  
 RNG. RANGE  
 FD FOUND  
 IP IRON PIPE



FD 2" IP W/2-1/2"  
 BRASS CAP  
 N 226720.42  
 E 2572285.99



**DAVID EVANS AND ASSOCIATES, INC.**  
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Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 9-18-98  
DEA Job No. COEX0302

## LEGAL DESCRIPTION AV

### Site AV

A tract of land lying in the northwest one-quarter of Section 14, Township 12 South, Range 4 East of the Boise Meridian, Owyhee County, Idaho, more particularly described as follows:

A circular tract of land of radius 60.00 feet, the center of which bears North 56° 57' 29" East a distance of 918.99 feet from the west quarter-section corner of Section 14, Township 12 South, Range 4 East, Boise Meridian.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999685.

The tract of land to which this description applies contains 0.260 acres, more or less.



o:\proj\safe\c\coex0302\legals\coex-av.rv2

# **SITE AV AND NO-DROP SITE 4**

N.W. 1/4 AND S.W. 1/4, SEC. 14, TWP. 12 S., RNG. 4 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO

SEPTEMBER 18, 1998

FD 18"x10"x8" TALL BASALT STONE  
W/4 NOTCHES ON S. FACE AND 2  
NOTCHES ON E. FACE W/3"x4"x0.5'  
TALL STONE MOUND 3' WEST  
N 263838.62  
E 2567166.97



**DAVID EVANS  
AND ASSOCIATES, INC.**

415 - 118TH AVENUE S.E.  
BELLEVUE, WA. 98005-3518 (425) 619-6500

## **LEGEND**

- SET 5/8" x 30"  
IRON ROD W/  
YELLOW PLASTIC  
CAP STAMPED "DEA  
INC." AS  
REFERENCE.

SEC. SECTION  
TWP. TOWNSHIP  
RNG. RANGE  
FD FOUND  
DIA. DIAMETER

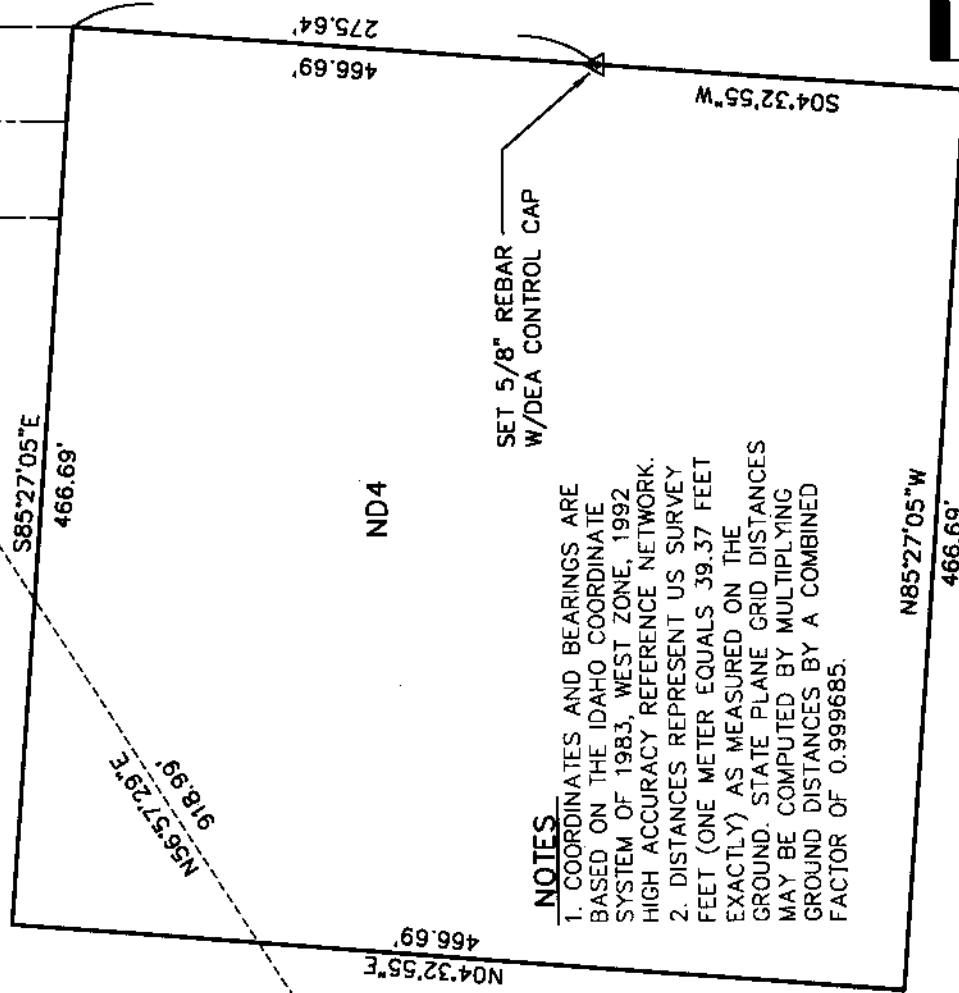
10 11  
15 14

2643.47'

S00°02'23"W

S70°03'40"E  
334.46'

FD 14"x9"x6" TALL BASALT STONE  
W/FAINT "1/4" ON W. FACE W/  
3' DIA.X0.4' TALL STONE MOUND  
2' WEST  
N 261195.99  
E 2567165.14



SET 5/8" REBAR  
W/DEA CONTROL CAP

## **NOTES**

1. COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
2. DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999685.



0 50 100 200



SITE AV

ROAD  
ND4, NEW



## LEGAL DESCRIPTION

Road AV and

### **Road ND4, New**

A 100-foot wide strip of land lying in the northwest one-quarter of Section 14, Township 12 South, Range 4 East of the Boise Meridian, Owyhee County, Idaho, being 50.00 feet on each side of the following described centerline.

Commencing at a point that bears South 70° 03' 40" East a distance of 334.46 feet from the west quarter-section corner of Section 14, Township 12 South, Range 4 East, Boise Meridian, said point of commencement being the southwesterly corner of Site ND4; thence tracing the westerly line of Site ND4 North 4° 32' 55" East a distance of 466.69 feet to the northwesterly corner thereof; thence tracing the northerly line of Site ND4 South 85° 27' 05" East a distance of 416.60 feet to the true point of beginning of this centerline description; thence North 1° 08' 35" East a distance of 182.99 feet to the center of Site AV; thence North 7° 38' 23" West a distance of 292.89 feet to a terminus point in an existing road, said terminus point bears North 42° 44' 44" East a distance of 1,077.62 feet from said west quarter-section corner of Section 14.

The sidelines of said strip of land are to be extended or shortened to begin on the northerly line of Site ND4.

EXCEPTING THEREFROM Site AV, being a 60-foot-radius circular tract centered on the end of the first course from the true point of beginning, as noted in the above centerline description, and the right-of-way, if any, of said existing road.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999685.

The tract of land to which this description applies contains 0.85 acres, more or less.

# **SITE AV AND NO-DROP SITE 4**

N.W. 1/4 AND S.W. 1/4, SEC. 14, TWP. 12 S., RNG. 4 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO

SEPTEMBER 18, 1998



**DAVID EVANS  
AND ASSOCIATES, INC.**

415 - 118TH AVENUE S.E.  
BELLEVUE, WA. 98005-3518 (425) 519-6500



FD 18"x10"x8" TALL BASALT STONE  
W/4 NOTCHES ON S. FACE AND 2  
NOTCHES ON E. FACE W/3"x4"x0.5'  
TALL STONE MOUND 3' WEST  
N 263838.62  
E 2567166.97

## **LEGEND**

- SET 5/8" x 30"  
IRON ROD W/  
YELLOW PLASTIC  
CAP STAMPED "DEA  
INC." AS  
REFERENCE.

SEC.  
TWP.  
RNG.  
FD  
DIA.

SECTION  
TOWNSHIP  
RANGE  
FOUND  
DIAMETER

S70°03'40"E  
334.46

FD 14"x9"x6" TALL BASALT STONE  
W/FAINT "1/4" ON W. FACE W/  
3' DIA.X0.4' TALL STONE MOUND  
2' WEST  
N 261195.99  
E 2567165.14

2643.47

S00°02'23"W

15014

S85°27'05"E

466.69'

N56°57'29"E  
918.99'

ND4

N04°32'55"E  
466.69'

SET 5/8" REBAR  
W/DEA CONTROL CAP

## **NOTES**

1. COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
2. DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999885.

N85°27'05"W

466.69'

S04°32'55"W

466.69'  
275.64'

ROAD  
ND4, NEW

SITE AV

N87°18'50"W  
100.00'

N 261696.91  
E 2567935.26

S87°18'50"E  
100.00'



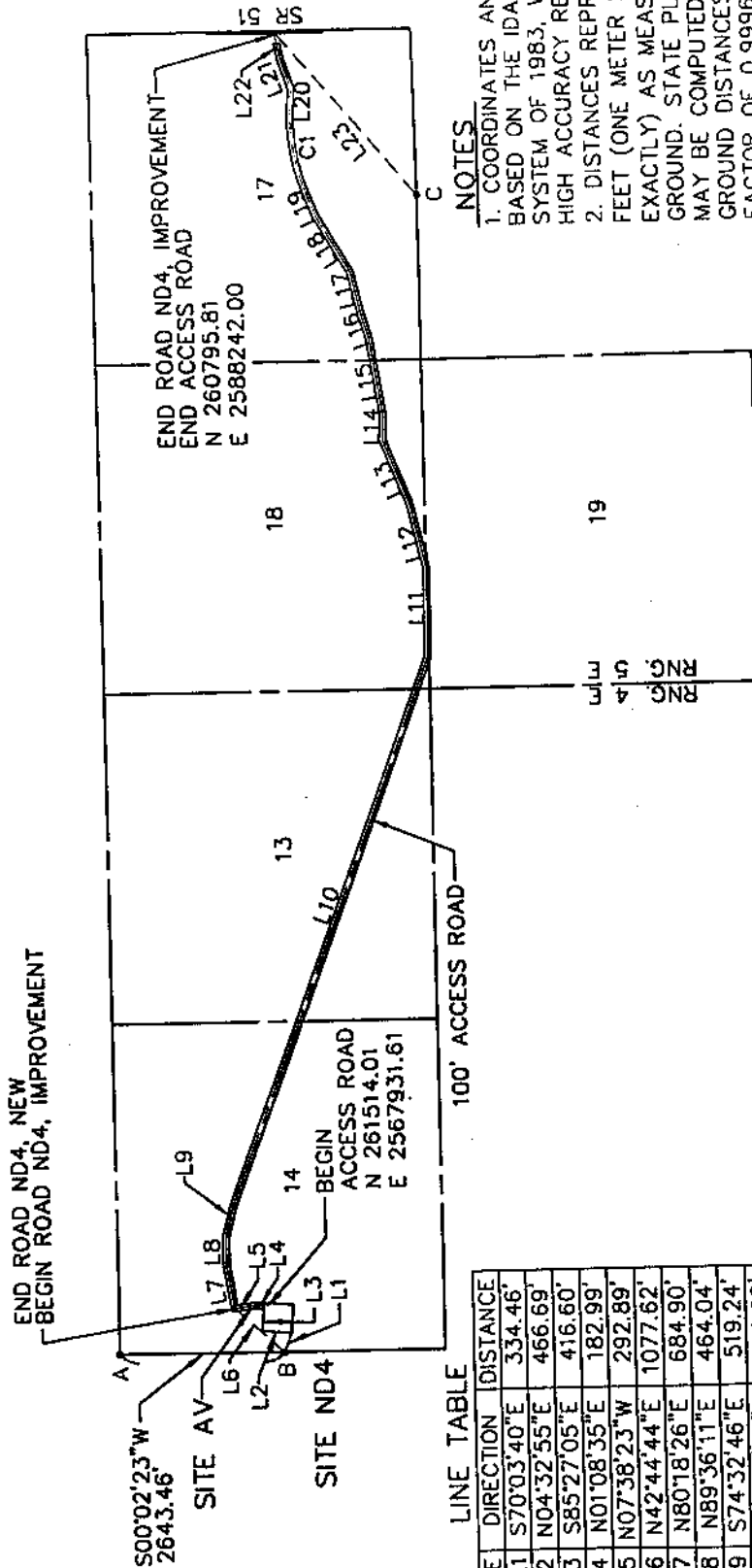
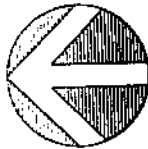
0

50

100

200

# ACCESS ROAD TO SITE AV AND NO-DROP SITE 4 PORTION OF SEC. 13 AND 14 TWP. 12 S., RNG. 4 E., TOGETHER WITH PORTION OF SEC. 17, 18, AND 19 TWP. 12 S., RNG. 5 E., BOISE MERIDIAN, OWYHEE COUNTY, IDAHO SEPTEMBER 18, 1998



LINE TABLE

LINE	DIRECTION	DISTANCE
L1	S70°03'40"E	334.46'
L2	N04°32'55"E	466.69'
L3	S85°27'05"E	416.60'
L4	N01°08'35"E	182.99'
L5	N07°38'23"W	292.89'
L6	N42°44'44"E	1077.62'
L7	N80°18'26"E	684.90'
L8	N89°36'11"E	464.04'
L9	S74°32'46"E	519.24'
L10	S68°29'55"E	9346.22'
L11	S89°20'56"E	1401.11'
L12	N76°50'33"E	1048.03'
L13	N67°42'08"E	1132.52'
L14	S87°40'43"E	437.10'
L15	N80°33'10"E	1225.32'
L16	N72°24'30"E	409.33'
L17	N77°01'22"E	686.16'
L18	N59°16'33"E	1080.73'
L19	N67°34'05"W	373.76'
L20	S86°34'25"E	357.16'
L21	N71°09'58"E	467.07'
L22	N78°03'05"E	455.74'
L23	N49°05'48"E	3484.78'

CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA
C1	3000.00'	1353.94'	25°51'30"

- A = FD 18"x10"x8" TALL BASALT STONE  
 W/4 NOTCHES ON S. FACE AND 2  
 NOTCHES ON E. FACE W/3'X4'X0.5'  
 TALL STONE MOUND 3' WEST  
 N 263838.62  
 E 2567166.97
- B = FD 14"x9"x6" TALL BASALT STONE  
 W/FAINT "1/4" ON W. FACE W/  
 3' DIA.X0.4' TALL STONE MOUND  
 2' WEST  
 N 261195.99  
 E 2567165.14

- C = FD 16"x9"x4" TALL BASALT STONE  
 W/1/4" ON N. FACE W/3' DIA.X1'  
 TALL STONE MOUND 2' NORTH  
 N 258514.75  
 E 2585608.97

## LEGEND

M/L	MORE OR LESS
SEC.	SECTION
TWP.	TOWNSHIP
RNG.	RANGE
FD	FOUND

## NOTES

- COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
- DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999685.



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Fax: 206.455.3061

Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 6-30-98  
DEA Job No. COEX0302

**LEGAL DESCRIPTION**  
**BA**

**Site BA**

A tract of land lying in the southwest one-quarter of Section 22, Township 9 South, Range 8 East of the Boise Meridian, Owyhee County, Idaho, more particularly described as follows:

Beginning at a point that bears South 54° 53' 57" East a distance of 1,160.95 feet from the west quarter-section corner of Section 22, Township 9 South, Range 8 East, Boise Meridian; thence North 86° 27' 00" East a distance of 208.71 feet; thence South 3° 33' 00" East a distance of 208.71 feet; thence South 86° 27' 00" West a distance of 208.71 feet; thence North 3° 33' 00" West a distance of 208.71 feet to the point of beginning.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999738.

The tract of land to which this description applies contains 1.000 acres, more or less.

**Road BA**

A 100-foot wide strip of land lying in the southwest and northwest one-quarters of Section 22, the northeast and northwest one-quarters of Section 21, and the northeast and northwest one-quarters of Section 20, Township 9 South, Range 8 East of the Boise Meridian, Owyhee County, Idaho, being 50.00 feet on each side of the following described centerline.

Commencing at a point which bears South 54° 53' 57" East a distance of 1,160.95 feet from the west quarter-section corner of Section 22, Township 9 South, Range 8 East, Boise Meridian, said





**LEGAL DESCRIPTION- Continued**  
**BA**

point of commencement being the northwesterly corner of Site BA; thence tracing the northerly line of Site BA North 86° 27' 00" East a distance of 25.00 feet to the true point of beginning of this centerline description; thence North 17° 20' 00" West a distance of 2,282.25 feet; thence South 86° 55' 51" West a distance of 1,373.40 feet; thence South 87° 29' 10" West a distance of 1775.89 feet; thence South 86° 35' 45" West a distance of 1,272.16 feet; thence North 89° 58' 17" West a distance of 1,990.05 feet; thence North 88° 05' 55" West a distance of 1,861.73 feet; thence North 84° 17' 56" West a distance of 1,530.77 feet to a terminus point in an existing road sometimes known as Clover Three Creek Road, said terminus point bears South 83° 07' 59" West a distance of 9,563.62 feet from the northwest corner of Section 22, Township 9 South, Range 8 East, Boise Meridian.

The sidelines of said strip of land are to be extended or shortened to begin on said northerly line of Site BA and its extension westerly, and end on the easterly right-of-way line, if any, of the existing road sometimes known as Clover Three Creek Road.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999738.

The tract of land to which this description applies contains 27.67 acres, more or less.



**SITE BA**  
 S.W. 1/4, SEC. 22, TWP. 9 S., RNG. 8 E.,  
 BOISE MERIDIAN, OWYHEE COUNTY, IDAHO  
 JUNE 30, 1998



**LEGEND**

SEC. SECTION  
 TWP. TOWNSHIP  
 RNG. RANGE  
 FD FOUND  
 IP IRON PIPE

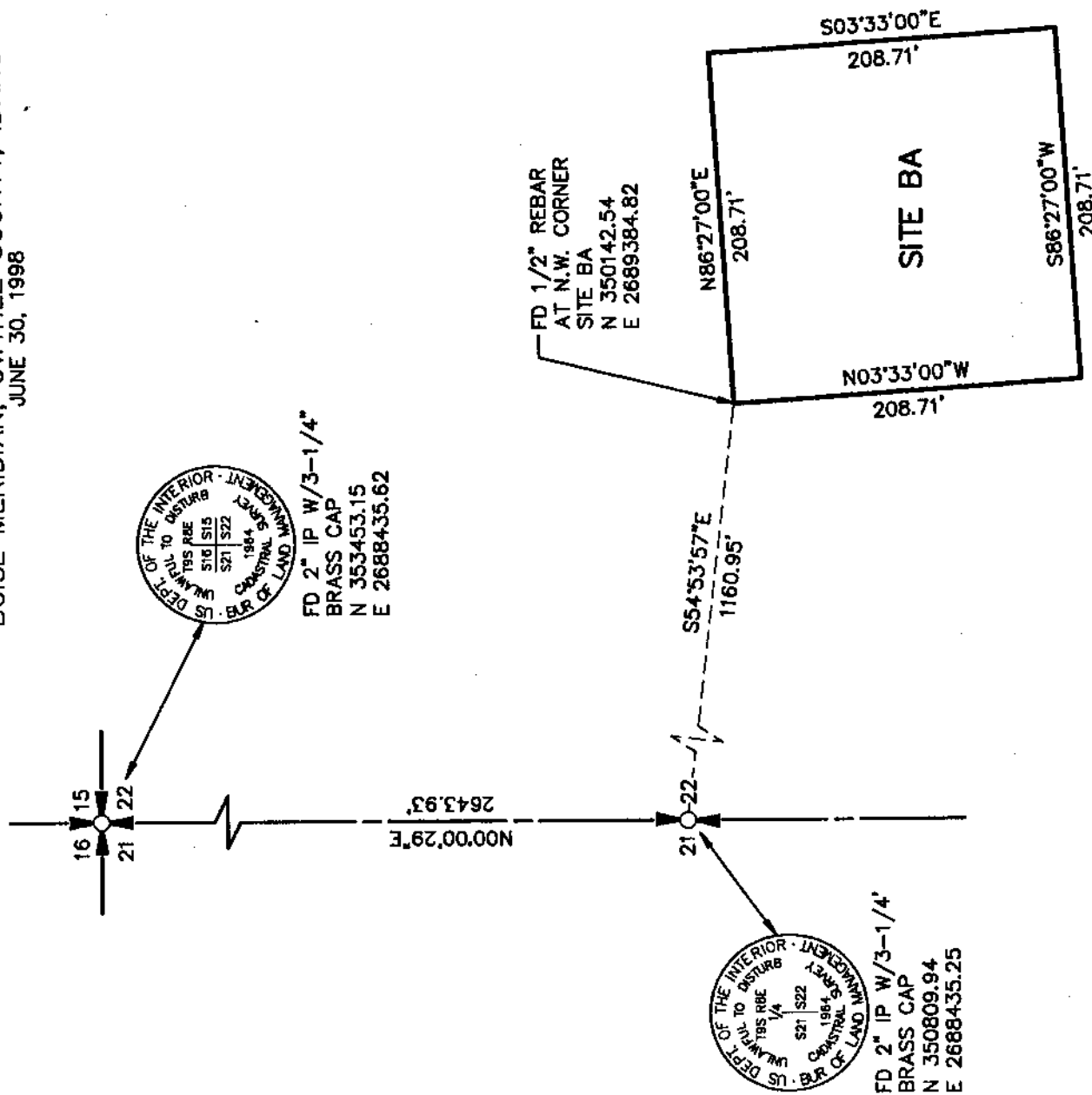
**NOTES**

1. COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
2. DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999738.



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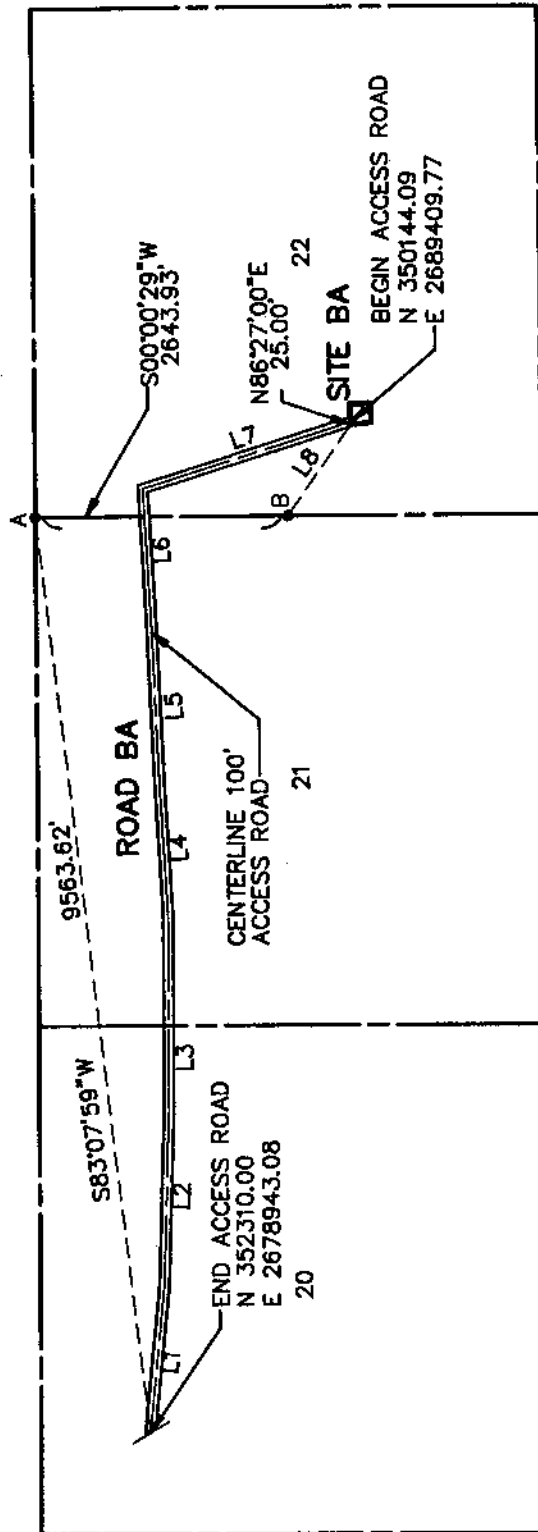
# ACCESS ROAD TO SITE BA

SEC. 20, 21, AND 22, TWP. 9 S., RNG. 8 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO

JUNE 30, 1998

LINE TABLE

LINE	DIRECTION	DISTANCE
L1	N84°17'56"W	1530.77'
L2	N88°05'55"W	1861.73'
L3	N89°58'17"W	1990.05'
L4	S86°35'45"W	1272.16'
L5	S87°29'10"W	1775.89'
L6	S86°55'51"W	1373.40'
L7	N17°20'00"W	2282.25'
L8	S54°53'57"E	1160.95'

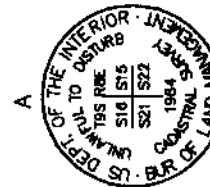


## NOTES

- COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
- DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999738.



FD 2" IP W/3-1/4"  
BRASS CAP  
N 350809.94  
E 2688435.25



FD 2" IP W/3-1/4"  
BRASS CAP  
N 353453.15  
E 2688435.62

## LEGEND

SEC. SECTION  
TWP. TOWNSHIP  
RNG. RANGE  
FD FOUND  
IP IRON PIPE

deem

INC

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AND ASSOCIATES,

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Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 6-30-98  
DEA Job No. COEX0302

**LEGAL DESCRIPTION  
BB**

**Site BB**

A tract of land lying in the southeast one-quarter of Section 34, Township 8 South, Range 9 East of the Boise Meridian, Owyhee County, Idaho, more particularly described as follows:

Beginning at a point that bears South 70° 20' 55" West a distance of 2,051.63 feet from the east quarter-section corner of Section 34, Township 8 South, Range 9 East, Boise Meridian; thence North 45° 17' 34" West a distance of 208.71 feet; thence North 44° 42' 26" East a distance of 208.71 feet; thence South 45° 17' 34" East a distance of 208.71 feet; thence South 44° 42' 26" West a distance of 208.71 feet to the point of beginning.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999755.

The tract of land to which this description applies contains 1.000 acres, more or less.



**LEGAL DESCRIPTION- Continued**  
**BB**

**Road BB**

A 100-foot wide strip of land lying in the southeast, southwest, and northwest one-quarters of Section 34, the northeast and northwest one-quarters of Section 33, the northeast, northwest, and southwest one-quarters of Section 32, and the northeast one-quarter of Section 31, Township 8 South, Range 9 East; the northwest and southwest one-quarters of Section 5, the northwest and southwest one-quarters of Section 8, the northwest and southwest one-quarters of Section 17, the northwest and southwest one-quarters of Section 20, the northwest and southwest one-quarters of Section 29, the northwest and southwest one-quarters of Section 32, and the southeast one-quarter of Section 31, Township 9 South, Range 9 East; the northeast and northwest one-quarters of Section 6, Township 10 South, Range 9 East; and the northeast, southeast, and southwest one-quarters of Section 1, the southeast one-quarter of Section 2, the northeast and northwest one-quarters of Section 11, and the northeast and northwest one-quarters of Section 10, Township 10 South, Range 8 East of the Boise Meridian, Owyhee County, Idaho, being 50.00 feet on each side of the following described centerline.

Commencing at a point which bears South 70° 20' 55" West a distance of 2,051.63 feet from the east quarter-section corner of Section 34, Township 8 South, Range 9 East, Boise Meridian; said point of commencement being the southerly corner of Site BB; thence tracing the southwesterly line of Site BB, North 45° 17' 34" West a distance of 208.71 feet to the westerly corner thereof; thence tracing the northwesterly line of Site BB, North 44° 42' 26" East a distance of 190.46 feet to the true point of beginning of this centerline description; thence North 2° 10' 14" West a distance of 79.05 feet; thence North 80° 44' 14" West a distance of 2,654.04 feet; thence North 71° 39' 49" West a distance of 768.52 feet; thence South 82° 14' 37" West a distance of 1,506.58 feet; thence North 77° 03' 56" West a distance of 2,136.06 feet; thence North 82° 55' 45" West a distance of 1883.41 feet; thence North 76° 42' 50" West a distance of 5,259.25 feet to a point that bears South 78° 17' 13" West a distance of 2,707.77 feet from the north quarter-section corner of Section 32, Township 8 South, Range 9 East, Boise Meridian; thence along the arc of a 1,100.00 foot radius curve to the left, not tangent to the last course (the radial center bears North 75° 34' 02" East), through a central angle of 50° 05' 47", an arc distance of 961.78 feet (the long chord bears South 39° 28' 51" East a distance of 931.44 feet) to a point of tangency; thence South 64° 31' 45" East a distance of 874.52 feet to a point of curvature; thence along the arc of a 800.00 foot radius curve to the right, through a central angle of 64° 06' 26", an arc distance of 895.11 feet (the long chord bears South 32° 28' 32" East a distance of 849.14 feet) to a point of tangency; thence South 0° 25' 18" East a distance of 28,644.71 feet; thence South 18° 09' 23" West a distance of



**LEGAL DESCRIPTION- Continued**  
**BB**

4,380.69 feet; thence South 31° 05' 43" West a distance of 1,949.12 feet; thence South 64° 28' 21" West a distance of 17,350.62 feet; thence South 72° 05' 03" West a distance of 3,255.00 feet to a terminus point in an existing road, sometimes known as Clover Three Creek Road, said terminus point bears South 61° 26' 37" West a distance of 21,982.59 feet from the west quarter-section corner of Section 32, Township 9 South , Range 9 East, Boise Meridian.

The sidelines of said strip of land are to be extended or shortened to begin on said northwesterly line of Site BB and end on the easterly right-of-way line, if any, of the existing road sometimes known as Clover Three Creek Road.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999755.

The tract of land to which this description applies contains 166.60 acres, more or less.



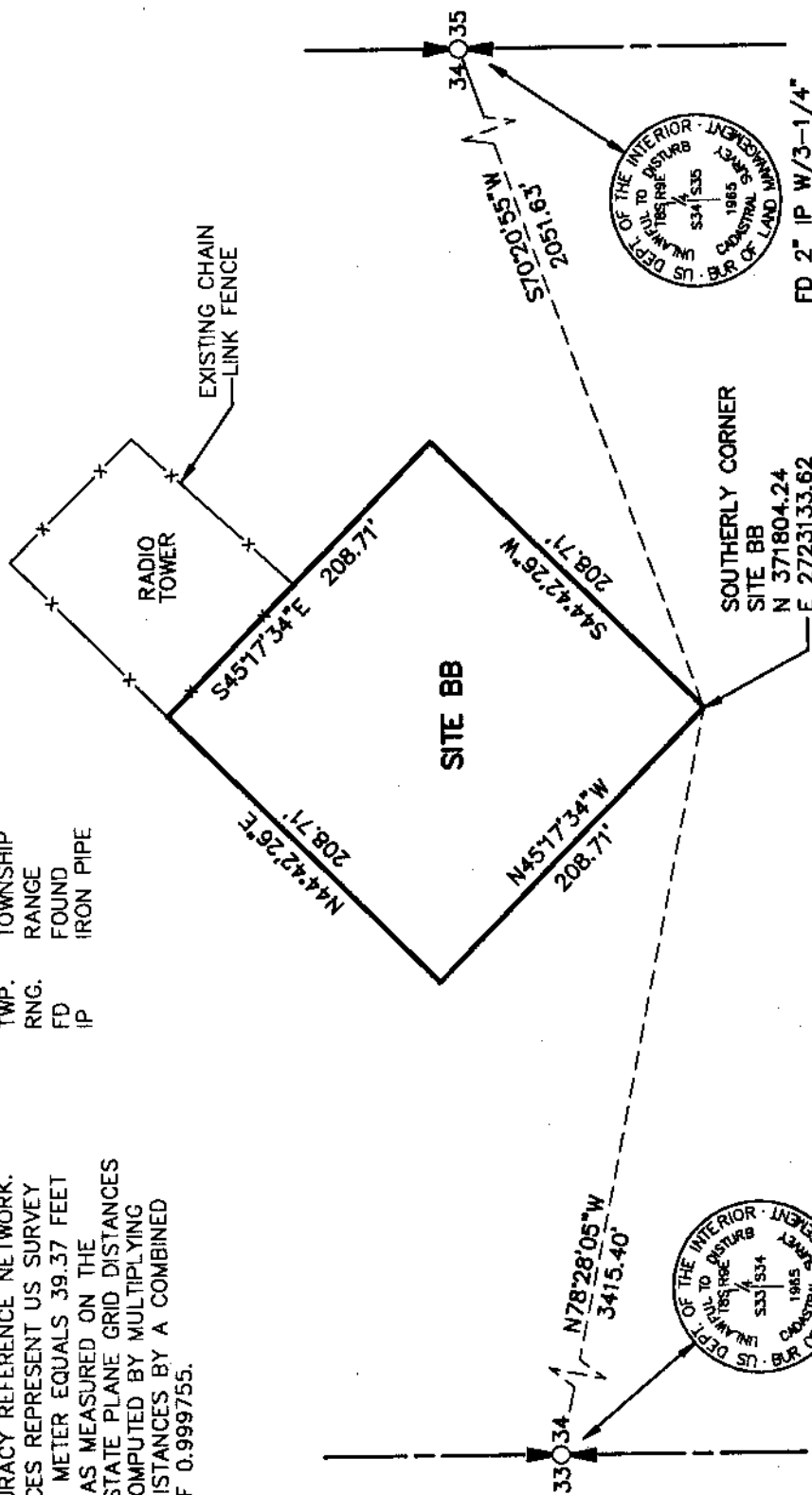
**SITE BB**  
 S.E. 1/4, SEC. 34, TWP. 8 S., RNG. 9 E.,  
 BOISE MERIDIAN, OWYHEE COUNTY, IDAHO  
 JUNE 30, 1998

**NOTES**

1. COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
2. DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999755.

**LEGEND**

SEC. SECTION  
 TWP. TOWNSHIP  
 RNG. RANGE  
 FD FOUND  
 IP IRON PIPE



**den**

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# ACCESS ROAD TO SITE BB

SEC. 31, 32, 33, AND 34, TWP. 8 S., RNG. 9 E.,  
SEC. 5, 8, 17, 20, 29, 31, AND 32, TWP. 9 S., RNG. 9 E.,  
SEC. 6, TWP. 10 S., RNG. 9 E., SEC. 1, 2, 10, AND 11, TWP. 10 S., RNG. 8 E.,  
BOISE MERIDIAN, OUYHEE COUNTY, IDAHO  
JUNE 30, 1998



0 2500 5000 10000

## NOTES

- COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
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## LEGEND

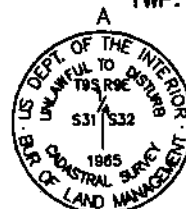
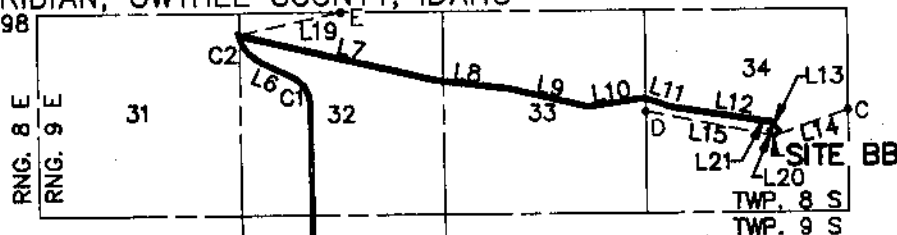
M/L MORE OR LESS  
SEC. SECTION  
TWP. TOWNSHIP  
RNG. RANGE  
FD FOUND  
IP IRON PIPE

## LINE TABLE

LINE	DIRECTION	DISTANCE	LINE	DIRECTION	DISTANCE
L1	S72°05'03"W	3255.00'	L12	N80°44'14"W	2654.04'
L2	S64°28'21"W	17350.62'	L13	N02°10'14"W	79.05'
L3	S31°05'43"W	1949.12'	L14	S70°20'55"W	2051.63'
L4	S18°09'23"W	4380.69'	L15	N78°28'05"W	3415.40'
L5	S00°25'18"E	28644.71'	L16	N57°32'45"E	2166.20'
L6	S64°31'45"E	874.52'	L17	S61°26'37"W	21982.59'
L7	N76°42'50"W	5259.25'	L18	S00°13'41"E	2639.47'
L8	N82°55'45"W	1883.41'	L19	S78°17'13"W	2707.77'
L9	N77°03'56"W	2136.06'	L20	N45°17'34"W	208.71'
L10	S82°14'37"W	1506.58'	L21	N44°42'26"E	190.46'
L11	N71°39'49"W	768.52'			

## CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA
C1	800.00'	895.11'	64°06'26"
C2	1100.00'	961.78'	50°05'47"



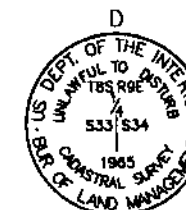
FD 2" IP W/3-1/4"  
BRASS CAP  
N 340300.24  
E 2709439.65



FD 2" IP W/3-1/4"  
BRASS CAP  
N 342939.01  
E 2709429.15



FD 2" IP W/3-1/4"  
BRASS CAP  
N 372494.03  
E 2725065.29



FD 2" IP W/3-1/4"  
BRASS CAP  
N 372486.85  
E 2719787.99



FD 2" IP W/3-1/4"  
BRASS CAP  
N 375098.57  
E 2711859.28

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Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 6-30-98  
DEA Job No. COEX0302

## LEGAL DESCRIPTION BC

### Site BC

A tract of land lying in the northwest one-quarter of Section 2, Township 12 South, Range 8 East of the Boise Meridian, Owyhee County, Idaho, more particularly described as follows:

Beginning at a point that bears South  $18^{\circ} 06' 37''$  West a distance of 1,113.41 feet from the north quarter-section corner of Section 2, Township 12 South, Range 8 East, Boise Meridian; thence South  $7^{\circ} 15' 05''$  West a distance of 208.71 feet; thence North  $82^{\circ} 44' 55''$  West a distance of 208.71 feet; thence North  $7^{\circ} 15' 05''$  East a distance of 208.71 feet; thence South  $82^{\circ} 44' 55''$  East a distance of 208.71 feet to the point of beginning.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999710.

The tract of land to which this description applies contains 1.000 acres, more or less.



**LEGAL DESCRIPTION- Continued**  
**BC**

**Road BC, New**

A 100-foot wide strip of land lying in all one-quarters of Section 2, and the northeast one-quarter of Section 11, Township 12 South, Range 8 East of the Boise Meridian, Owyhee County, Idaho, being 50.00 feet on each side of the following described centerline.

Commencing at a point which bears South 18° 06' 37" West a distance of 1,113.41 feet from the north quarter-section corner of Section 2, Township 12 South, Range 8 East, Boise Meridian said point of commencement being the northeasterly corner of Site BC; thence tracing the easterly line of Site BC South 7° 15' 05" West a distance of 208.71 feet to the southeast corner thereof; thence tracing the southerly line of Site BC North 82° 44' 55" West a distance of 158.71 feet to the true point of beginning of this centerline description; thence South 7° 15' 05" West a distance of 107.55 feet; thence South 35° 22' 01" East a distance of 504.77 feet; thence South 11° 52' 09" East a distance of 906.29 feet; thence South 5° 20' 38" East a distance of 889.78 feet; thence South 17° 24' 15" East a distance of 865.74 feet; thence South 34° 53' 19" East a distance of 854.80 feet; thence South 44° 36' 28" East a distance of 1,953.81 feet to the terminus of this centerline description, being South 66° 13' 38" East a distance of 2,326.85 feet from the northerly quarter-section corner of Section 11, Township 12 South, Range 8 East, Boise Meridian, and being a point in an existing road.

The sidelines of said strip of land are to be extended or shortened to begin on said southerly line of Site BC and end on the northwesterly right-of-way line, if any, of said existing road.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999710.

The tract of land to which this description applies contains 13.96 acres, more or less.



## LEGAL DESCRIPTION- Continued BC

### **Road BC, Improvement**

A 100-foot wide strip of land lying in the northeast one-quarter of Section 11, the northwest and northeast one-quarters of Section 12, and the southeast one-quarter of Section 1, Township 12 South, Range 8 East, and the southwest one-quarter of Section 6, Township 12 South, Range 9 East of the Boise Meridian, Owyhee County, Idaho, being 50.00 feet on each side of the following described centerline.

Beginning at a point which bears South 66° 13' 38" East a distance of 2,326.85 feet from the northerly quarter-section corner of Section 11, Township 12 South, Range 8 East, Boise Meridian, being a point in an existing road and the terminus of the centerline of Road BC, New as described herein; thence generally along said existing road North 62° 23' 24" East a distance of 316.51 feet; thence North 76° 37' 44" East a distance of 679.56 feet; thence South 85° 30' 37" East a distance of 220.92 feet; thence North 81° 33' 13" East a distance of 588.06 feet; thence North 70° 09' 48" East a distance of 1,292.02 feet; thence North 80° 34' 22" East a distance of 727.51 feet; thence North 65° 38' 09" East a distance of 1,180.38 feet; thence North 88° 20' 36" East a distance of 416.46 feet; thence North 69° 04' 48" East a distance of 390.47 feet to a point which bears North 23° 38' 49" West, a distance of 649.39 feet from the southeast corner of Section 1, Township 12 South, Range 8 East, Boise Meridian; thence North 81° 27' 57" East a distance of 400 feet, more or less, to the center of a second existing road.

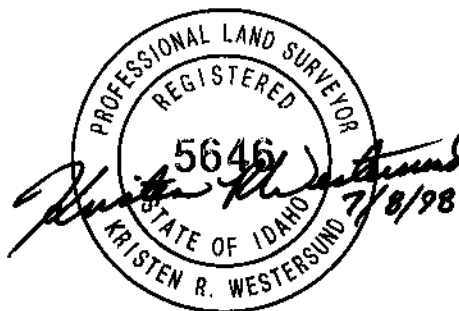
The sidelines of said strip of land are to be extended or shortened to intersect the extended or shortened sidelines of Road BC, New as described herein, and end on the westerly right-of-way line, if any, of said second existing road.



**LEGAL DESCRIPTION- Continued  
BC**

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999710.

The tract of land to which this description applies contains 14.27 acres, more or less.





**SITE BC**  
S.E. 1/4 SEC. 1, SEC. 2, N.E. 1/4 SEC. 11,  
N 1/2 SEC. 12, TWP. 12 S, RNG. 8 E,  
S.W. 1/4 SEC. 6, TWP. 12 S., RNG. 9 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO  
JUNE 30, 1998

FD 1" IP W/2-1/2"  
BRASS CAP  
N 274243.18  
E 2696531.92



N.E. CORNER  
N 273185.24  
E 2696185.92

158.71'

BEGIN NEW ACCESS ROAD  
N 272998.28  
E 2696002.19

ROAD BC  
CENTERLINE 100'  
NEW ACCESS ROAD

**NOTES**

1. COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992. HIGH ACCURACY REFERENCE NETWORK.
2. DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999710.

**LINE TABLE**

LINE	DIRECTION	DISTANCE
L1	N81°27'57"E	400 M/L
L2	N69°04'48"E	390.47'
L3	N88°20'36"E	416.46'
L4	N65°38'09"E	1180.38'
L5	N80°34'22"E	727.51'
L6	N70°09'48"E	1292.02'
L7	N81°33'13"E	588.06'
L8	S85°30'37"E	220.92'
L9	N76°37'44"E	679.56'
L10	N62°23'24"E	316.51'
L11	S44°36'28"E	1953.81'
L12	S34°53'19"E	854.80'
L13	S17°24'15"E	865.74'
L14	S05°20'38"E	889.78'
L15	S11°52'09"E	906.29'
L16	S35°22'01"E	504.77'
L17	S07°15'05"W	107.55'
L18	S18°06'37"W	1113.41'
L19	N82°44'55"W	208.71'
L20	N07°15'05"E	208.71'
L21	S82°44'55"E	208.71'
L22	S07°15'05"W	208.71'
L23	N23°38'49"W	649.39'
L24	S66°13'38"E	2326.85'

FD 1-1/2" IP W/  
2-1/2" BRASS CAP  
N 268764.19  
E 2704460.87



RNG. 8 EAST  
RNG. 9 EAST

N 2704200.47  
E 269358.88

SEC. 6  
SEC. 7

SEC. 12  
SEC. 7

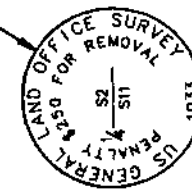
CENTERLINE 100'  
ACCESS ROAD  
IMPROVEMENT

SEC. 1  
SEC. 12

ROAD BC

SEC. 12  
SEC. 11

END NEW ACCESS ROAD  
BEGIN 100' ACCESS ROAD IMPROVEMENT  
N 267790.41  
E 2698669.23



FD 1" IP W/2-1/2"  
BRASS CAP  
N 268728.12  
E 2696540.44

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Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 6-30-98  
DEA Job No. COEX0302

**LEGAL DESCRIPTION**  
**BD**

**Site BD**

A tract of land lying in the northwest one-quarter of Section 21, Township 15 South, Range 6 East of the Boise Meridian, Owyhee County, Idaho, more particularly described as follows:

Beginning at a point that bears South 18° 30' 12" West a distance of 1,403.04 feet from the north quarter-section corner of Section 21, Township 15 South, Range 6 East, Boise Meridian; thence South 79° 18' 33" East a distance of 208.71 feet; thence South 10° 41' 27" West a distance of 208.71 feet; thence North 79° 18' 33" West a distance of 208.71 feet; thence North 10° 41' 27" East a distance of 208.71 feet to the point of beginning.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999670.

The tract of land to which this description applies contains 1.000 acres, more or less.



**LEGAL DESCRIPTION- Continued**  
**BD**

**Road BD**

A 100-foot wide strip of land lying in the northwest one-quarter of Section 21, Township 15 South, Range 6 East of the Boise Meridian, Owyhee County, Idaho, being 50.00 feet on each side of the following described centerline.

Commencing at a point which bears South 18° 30' 12" West a distance of 1,403.04 feet from the north quarter-section corner of Section 21, Township 15 South, Range 6 East, Boise Meridian, said point of commencement being the northwesterly corner of Site BD; thence tracing the westerly line of Site BD South 10° 41' 27" West a distance of 51.10 feet to the true point of beginning of this centerline description; thence North 67° 23' 50" West a distance of 172.84 feet; thence North 84° 50' 03" West a distance of 390.24 feet; thence North 88° 05' 24" West a distance of 425.25 feet; thence North 57° 16' 55" West a distance of 173 feet; more or less, to the center of an existing road sometimes known as Rowland Road.

The sidelines of said strip of land are to be extended or shortened to begin on said westerly line of Site BD and end on the easterly right-of-way line, if any, of the existing road sometimes known as Rowland Road.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999670.

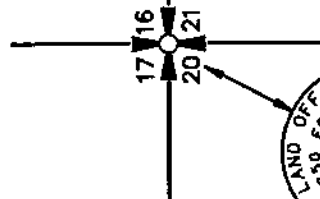
The tract of land to which this description applies contains 2.57 acres, more or less.



# **SITE BD**

N.W. 1/4, SEC. 21, TWP. 15 S., RNG. 6 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO

JUNE 30, 1998

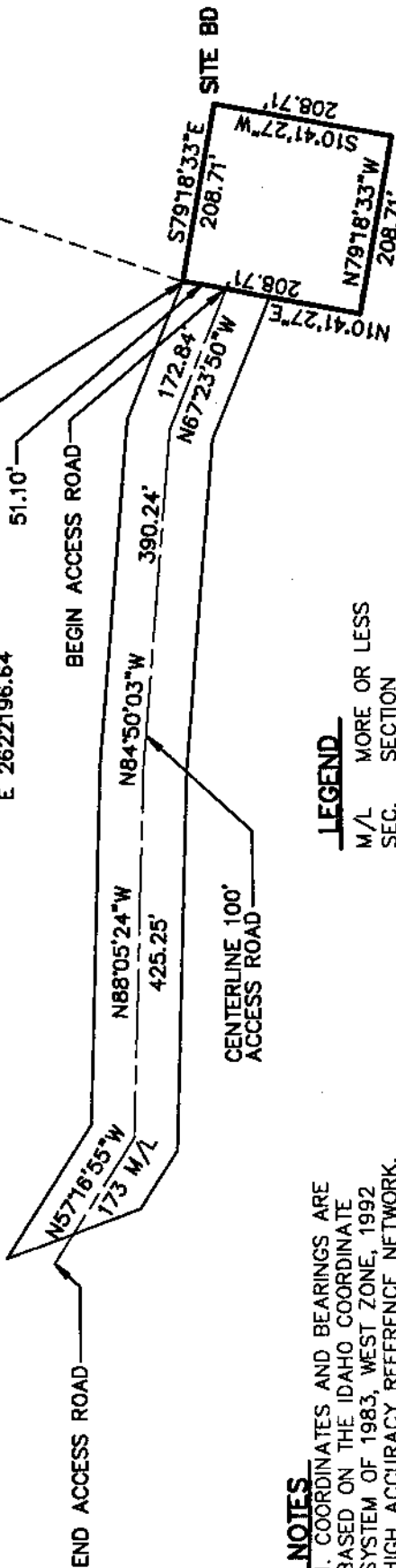


FD 1-1/2" IP  
W 2-1/2" BRASS CAP  
N 163313.16  
E 2620004.10

S89°57'55"W  
2638.53'

FD 6"x8"x7" TALL STONE  
W 1/4" ON N. FACE W/  
3' DIA. 0.5' TALL STONE  
MOUND 2' N.  
N 163314.76  
E 2622641.76

N.W. CORNER EMITTER SITE BD  
FD 1/2" REBAR UP 2'  
N 161984.69  
E 2622196.64



## **NOTES**

- COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
- DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999670.

## **LEGEND**

- M/L MORE OR LESS
- SEC. SECTION
- TWP. TOWNSHIP
- RNG. RANGE
- FD FOUND
- IP IRON PIPE



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Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 6-30-98  
DEA Job No. COEX0302

LEGAL DESCRIPTION  
BE

Site BE

A tract of land lying in the southwest one-quarter of Section 29, Township 14 South, Range 10 East of the Boise Meridian, Owyhee County, Idaho more particularly described as follows:

Beginning at a point that bears North 8° 16' 05" East a distance of 802.49 feet from the southwest corner of Section 29, Township 14 South, Range 10 East, Boise Meridian; thence North 14° 03' 41" East a distance of 208.71 feet; thence South 75° 56' 19" East a distance of 208.71 feet; thence South 14° 03' 41" West a distance of 208.71 feet; thence North 75° 56' 19" West a distance of 208.71 feet to the point of beginning.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999693.

The tract of land to which this description applies contains 1.000 acres, more or less.



## **LEGAL DESCRIPTION- Continued BE**

### **Road BE, New**

A 100-foot wide strip of land lying in the southwest and northwest one-quarters of Section 29, Township 14 South, Range 10 East of the Boise Meridian, Owyhee County, Idaho, being 50.00 feet on each side of the following described centerline.

Commencing at a point which bears North 8° 16' 05" East a distance of 802.49 feet from the southwest corner of Section 29, Township 14 South, Range 10 East, Boise Meridian, said point of commencement being the southwesterly corner of Site BE; thence tracing the westerly line of Site BE North 14° 03' 41" East a distance of 208.71 feet to the northwesterly corner thereof; thence tracing the northerly line of Site BE South 75° 56' 19" East a distance of 156.30 feet to the true point of beginning of this centerline description; thence North 31° 29' 36" East a distance of 238.46 feet; thence North 18° 45' 11" East a distance of 774.63 feet; thence North 18° 24' 51" West a distance of 405.79 feet; thence North 32° 32' 21" West a distance of 416.93 feet; thence North 54° 43' 38" West a distance of 241.06 feet to the terminus of this centerline description, being North 50° 39' 57" East a distance of 206.63 feet from the westerly quarter-section corner of Section 29, Township 14 South, Range 10 East, Boise Meridian, and being a point in an existing road.

The sidelines of said strip of land are to be extended or shortened to begin on said northerly line of Site BE and end on the southeasterly right-of-way line, if any, of said existing road.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999693.

The tract of land to which this description applies contains 4.77 acres, more or less.



## LEGAL DESCRIPTION- Continued BE

### Road BE, Improvement

A 100-foot wide strip of land lying in the southwest and northwest one-quarters of Section 29, and the northeast, southeast, and southwest one-quarters of Township 14 South, Range 10 East of the Boise Meridian, Owyhee County, Idaho, being 50.00 feet on each side of the following described centerline.

Beginning at a point which bears North 50° 39' 57" East a distance of 206.63 feet from the westerly quarter-section corner of Section 29, Township 14 South, Range 10 East, Boise Meridian, being a point in an existing road and the terminus of the centerline of Road BE, New as described herein; thence generally along said existing road South 51° 06' 47" West a distance of 179.88 feet; thence North 87° 35' 11" West a distance of 126.17 feet; thence North 68° 03' 43" West a distance of 201.08 feet; thence South 80° 50' 31" West a distance of 295.10 feet; thence South 65° 44' 03" West a distance of 265.45 feet; thence South 88° 25' 47" West a distance of 956.98 feet; thence South 65° 29' 16" West a distance of 378.52 feet; thence South 89° 11' 04" West a distance of 256.66 feet; thence South 76° 34' 38" West a distance of 290 feet, more or less, to the center of an existing road sometimes known as Clover Three Creek Road.

The sidelines of said strip of land are to be extended or shortened to intersect the extended or shortened sidelines of Road BC, New as described herein, and end on the easterly right-of-way line, if any, of the existing road sometimes known as Clover Three Creek Road.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999693.

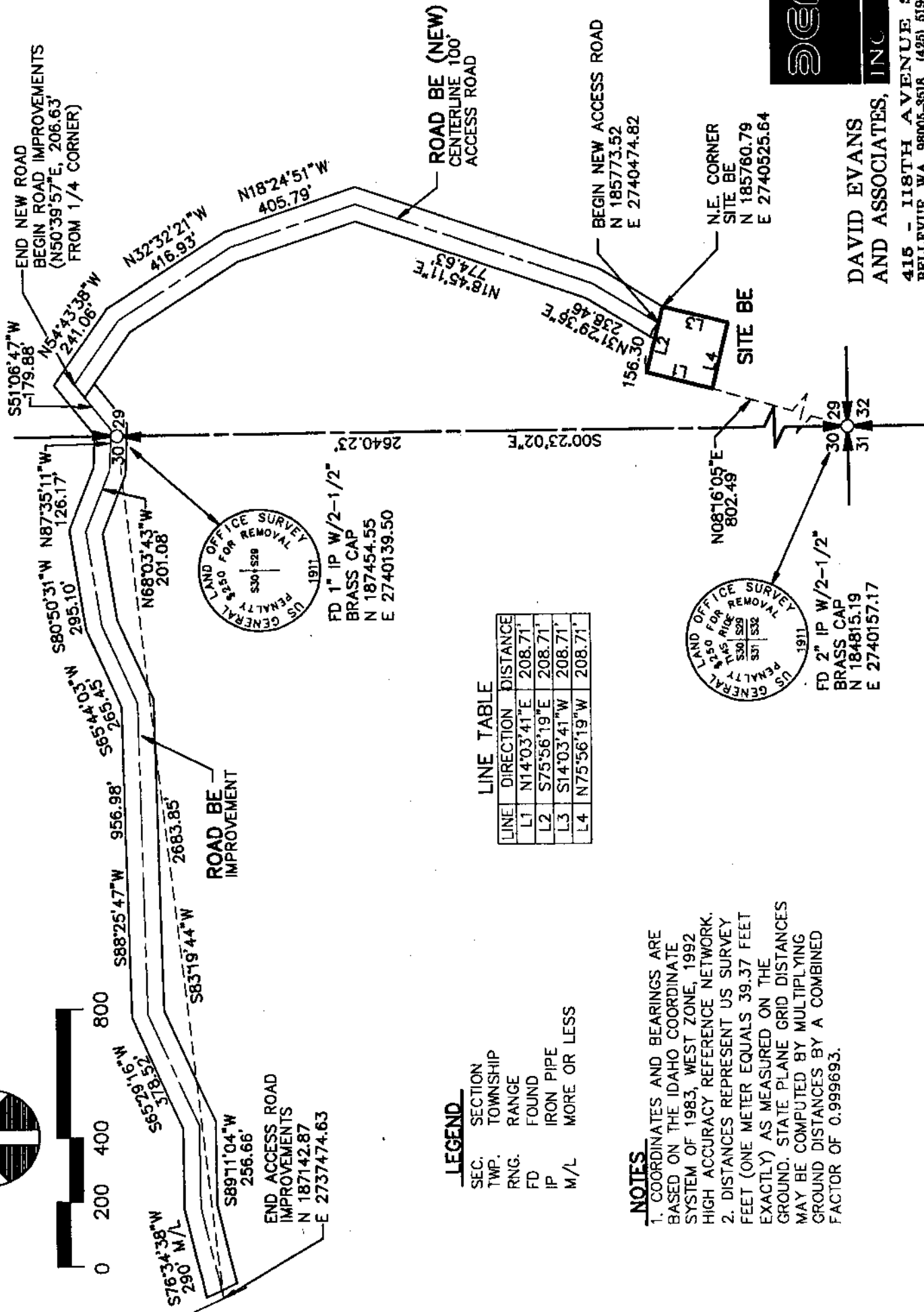
The tract of land to which this description applies contains 6.71 acres, more or less.



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W. 1/2 SEC. 29 AND SEC. 30, TWP. 14 S., RNG. 10 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO  
JUNE 30, 1998



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Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 7-8-98  
DEA Job No. COEX0302

**LEGAL DESCRIPTION  
BF-Federal**

**Site BF**

A tract of land lying in the southwest one-quarter of Section 15, Township 9 South, Range 6 East of the Boise Meridian, Owyhee County, Idaho, more particularly described as follows:

Beginning at U.S. Geological Survey point "Target, 1946" a 3 1/2-inch brass disc that bears South 18° 54' 40" East a distance of 1,381.12 feet from the west quarter-section corner of Section 15, Township 9 South, Range 6 East, Boise Meridian; thence North 16° 31' 41" East a distance of 208.71 feet; thence South 73° 28' 19" East a distance of 208.71 feet; thence South 16° 31' 41" West a distance of 208.71 feet; thence North 73° 28' 19" West a distance of 208.71 feet to the point of beginning.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999762.

The tract of land to which this description applies contains 1.000 acres, more or less.



**LEGAL DESCRIPTION- Continued**  
**BF-Federal**

**Road BF, New**

A 100-foot wide strip of land lying in the southwest one-quarter of Section 15, Township 9 South, Range 6 East of the Boise Meridian, Owyhee County, Idaho, being 50.00 feet on each side of the following described centerline.

Commencing at U.S. Geological Survey point "Target, 1946" a 3 1/2-inch brass disc that bears South 18° 54' 40" East a distance of 1,381.12 feet from the west quarter-section corner of Section 15, Township 9 South, Range 6 East, Boise Meridian, said point of commencement being the southwesterly corner of Site BF; thence tracing the southerly line of Site BF South 73° 28' 19" East a distance of 208.71 feet to the southeast corner thereof; thence tracing the easterly line of Site BF North 16° 31' 41" East a distance of 32.21 feet to true point of beginning of this centerline description; thence South 26° 29' 27" East a distance of 204.88 feet; thence South 9° 18' 03" East a distance of 147.33 feet; thence South 34° 15' 02" West a distance of 276.39 feet to a terminus point in an existing road, said terminus point bears North 69° 51' 52" West a distance of 2,159.68 feet from the south quarter-section corner of Section 15, Township 9 South, Range 6 East, Boise Meridian.

The sidelines of said strip of land are to be extended or shortened to begin on said southerly and easterly lines of Site BF and end on the northerly right-of-way line, if any, of said existing road.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999762.

The tract of land to which this description applies contains 1.46 acres, more or less.

**Road BF, Improvement-Federal**

A 100-foot wide strip of land lying in the southwest one-quarter of Section 15, Township 9 South, Range 6 East of the Boise Meridian, Owyhee County, Idaho, being 50.00 feet on each side of the following described centerline.



**LEGAL DESCRIPTION- Continued**  
**BF-Federal**

Beginning at a point that bears North 69° 51' 52" West a distance of 2,159.68 feet from the south quarter-section corner of Section 15, Township 9 South, Range 6 East, Boise Meridian, thence generally along an existing road South 89° 59' 53" West a distance of 441.02 feet; thence South 69° 14' 00" West a distance of 190.50 feet; thence South 76° 24' 47" West a distance of 312.57 feet.

The sidelines of said strip of land are to be extended or shortened to begin on the extended or shortened sidelines of Road BF, New as described herein and end on the westerly line of Section 15, Township 9 South, Range 6 East, Boise Meridian.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999762.

The tract of land to which this description applies contains 1.44 acres, more or less.



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S.W. 1/4, SEC. 15, S.E. 1/4, SEC. 16, TWP. 9 S., RNG. 6 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO  
JULY 8, 1998

SITE BF



# **NOTES**

- COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
- DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999762.

# **LEGEND**

M/L MORE OR LESS  
SEC. SECTION  
TWP. TOWNSHIP  
RNG. RANGE  
FD FOUND  
IP IRON PIPE

$$\Delta = 36^{\circ}50'44''$$

$$R = 370.00'$$

$$L = 237.94'$$

FD 1" IP W/  
2-1/2" BRASS CAP  
N 353378.60  
E 2622718.39



FD 1" IP W/  
2-1/2" BRASS CAP  
N 356014.89  
E 2625351.28



FD 3-1/2"  
BRASS DISC  
N 354708.63  
E 2625798.80

ROAD BF  
IMPROVEMENT  
FEDERAL

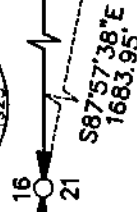
ROAD BF  
IMPROVEMENT  
STATE

FD 1" IP W/  
2-1/2" BRASS CAP  
N 353379.78  
E 2627994.85



SEC. 16,  
SEC. 21.

FD 1" IP W/  
2-1/2" BRASS CAP  
N 353378.60  
E 2622718.39



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Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 7-8-98  
DEA Job No. COEX0302

**LEGAL DESCRIPTION  
BF-State**

**Road BF, Improvement-State**

A 100-foot wide strip of land lying in the southeast one-quarter of Section 16, Township 9 South, Range 6 East of the Boise Meridian, Owyhee County, Idaho, being 50.00 feet on each side of the following described centerline.

Beginning at a point that bears North  $69^{\circ} 51' 52''$  West a distance of 2,159.68 feet from the south quarter-section corner of Section 15, Township 9 South, Range 6 East, Boise Meridian, thence generally along an existing road South  $89^{\circ} 59' 53''$  West a distance of 441.02 feet; thence South  $69^{\circ} 14' 00''$  West a distance of 190.50 feet; thence South  $76^{\circ} 24' 47''$  West a distance of 312.57 feet to a point of curvature; thence along the arc of a 370.00 foot radius curve to the left, through a central angle of  $36^{\circ} 50' 44''$ , an arc distance of 237.94 feet (the long chord bears South  $57^{\circ} 59' 25''$  West a distance of 233.86 feet) to a point of tangency; thence South  $39^{\circ} 34' 03''$  West a distance of 700.00 feet to a point that bears South  $87^{\circ} 57' 38''$  East a distance of 1,683.95 feet from the south quarter-section corner of Section 16, Township 9 South, Range 6 East, Boise Meridian.

EXCEPTING THEREFROM any portion of said strip of land falling outside of Section 16, Township 9 South, Range 6 East, Boise Meridian.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999762.

The tract of land to which this description applies contains 2.71 acres, more or less.



**LEGAL DESCRIPTION- Continued**  
**BF-State**



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### NOTES

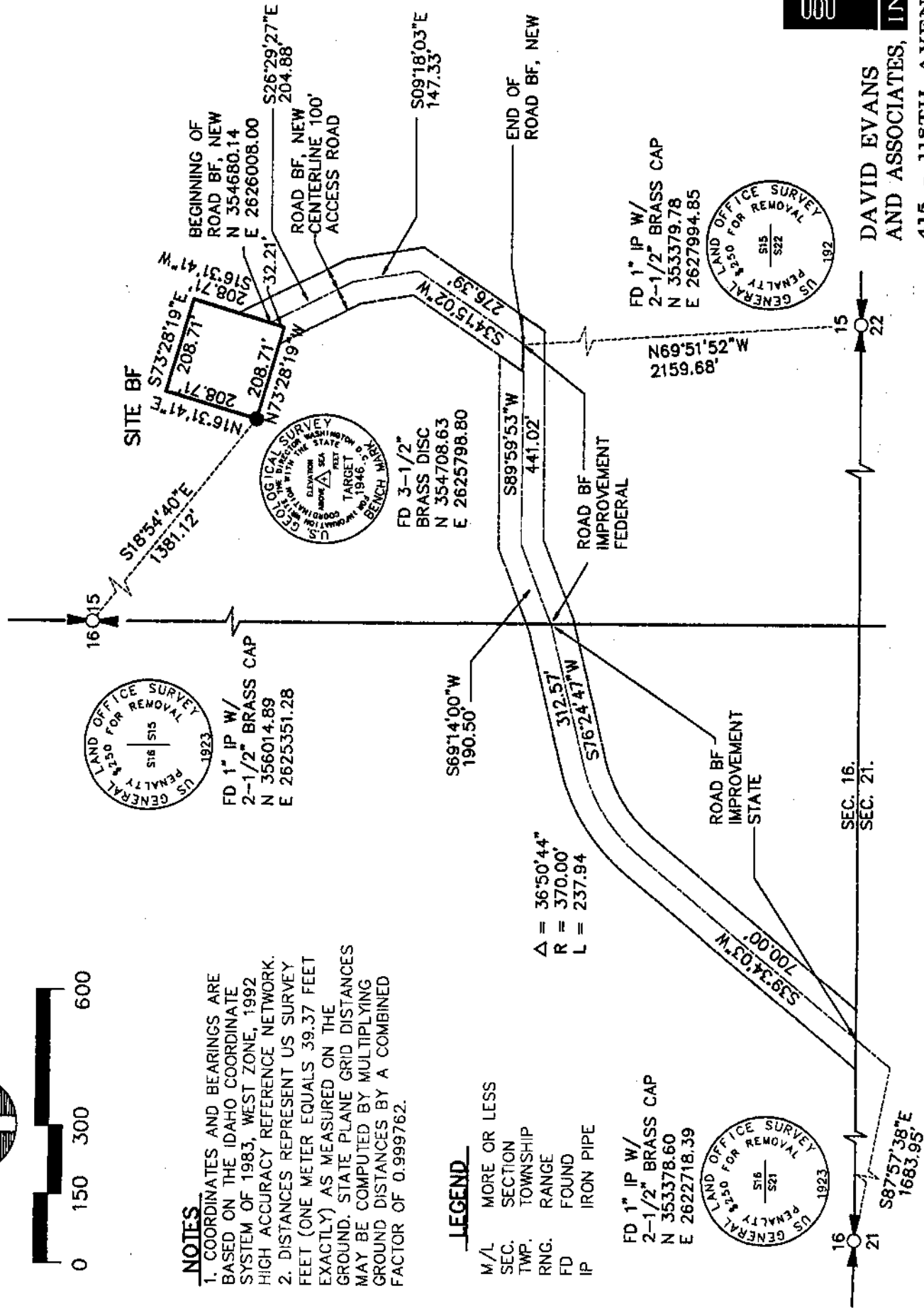
- COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
- DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999762.

### LEGEND

- M/L MORE OR LESS  
SEC. SECTION  
TWP. TOWNSHIP  
RNG. RANGE  
FD FOUND  
IP IRON PIPE

S.W. 1/4, SEC. 15, S.E. 1/4, SEC. 16, TWP. 9 S., RNG. 6 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO  
JULY 8, 1998

SITE BF



deem

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Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 6-30-98  
DEA Job No. COEX0302

**LEGAL DESCRIPTION  
BG**

**Site BG**

A tract of land lying in the northeast one-quarter of Section 5, Township 12 South, Range 5 East of the Boise Meridian, Owyhee County, Idaho more particularly described as follows:

Beginning at a point that bears North 14° 23' 58" East a distance of 3,877.44 feet from the south quarter-section corner of Section 5, Township 12 South, Range 5 East, Boise Meridian; thence North 67° 48' 29" West a distance of 208.71 feet; thence North 22° 11' 31" East a distance of 208.71 feet; thence South 67° 48' 29" East a distance of 208.71 feet; thence South 22° 11' 31" West a distance of 208.71 feet to the point of beginning.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999695.

The tract of land to which this description applies contains 1.000 acres, more or less.



**LEGAL DESCRIPTION- Continued**  
**BG**

**Road BG**

A 100-foot wide strip of land lying in the northeast one-quarter of Section 5, Township 12 South, Range 5 East of the Boise Meridian, Owyhee County, Idaho, being 50.00 feet on each side of the following described centerline.

Commencing at a point which bears North 14° 23' 58" East a distance of 3,877.44 feet from the south quarter-section corner of Section 5, Township 12 South, Range 5 East, Boise Meridian, said point of commencement being the southeasterly corner of Site BG; thence tracing the easterly line of Site BG North 22° 11' 31" East a distance of 121.31 feet to the true point of beginning of this centerline description; thence South 82° 55' 50" East a distance of 147.36 feet; thence South 77° 26' 17" East a distance of 430.55 feet; thence South 70° 07' 37" East a distance of 332.64 feet; thence South 72° 11' 17" East a distance of 602 feet, more or less, to the westerly right-of-way line of Idaho State Highway 51.

The sidelines of said strip of land are to be extended or shortened to begin on said easterly line of Site BG and end on the westerly right-of-way line of Idaho State Highway 51.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999695.

The tract of land to which this description applies contains 3.47 acres, more or less.



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# N.E. 1/4, SEC. 5, TWP. 12 S., RNG. 5 E., BOISE MERIDIAN, OWYHEE COUNTY, IDAHO

JUNE 30, 1998

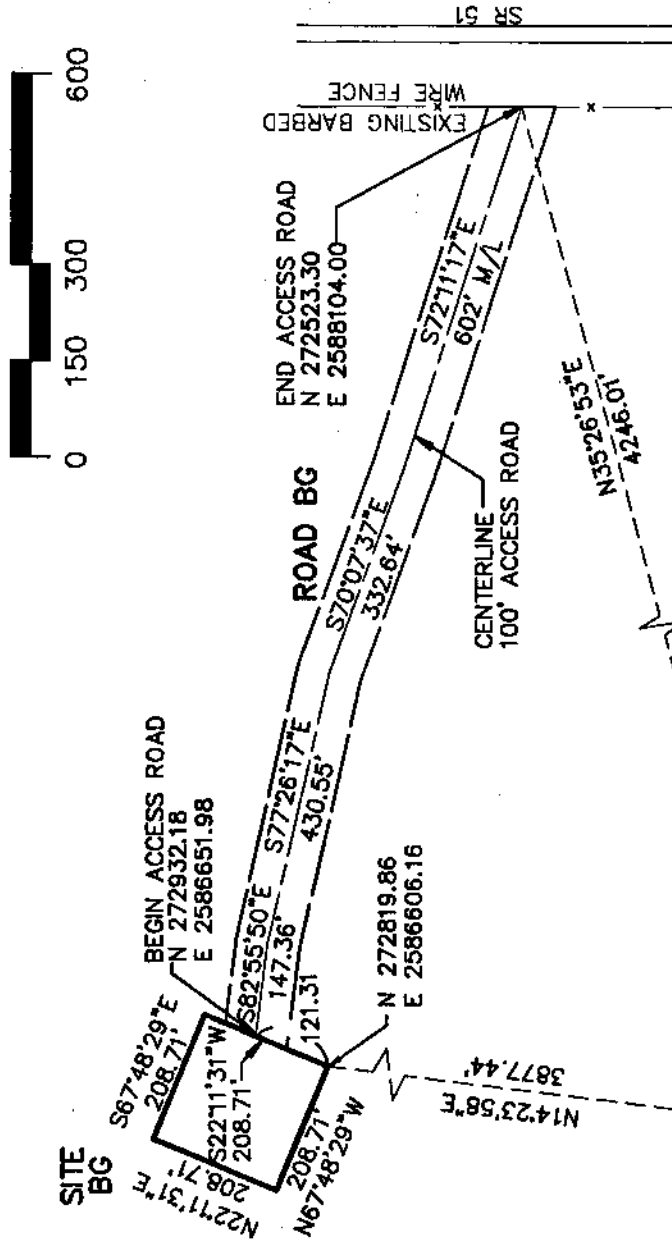
## SITE BG

**LEGEND**  
M/L MORE OR LESS  
DIA. DIAMETER  
SEC. SECTION  
TWP. TOWNSHIP  
RNG. RANGE  
FD FOUND

**NOTES**  
1. COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.  
2. DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999695.

FD 15"x5"x15" TALL BASALT STONE  
UP 0.10" W/5 CLEAR NOTCHES ON  
E. FACE AND AT LEAST 4 FAINTER  
NOTCHES ON S. FACE W/3" DIA.X1.5"  
TALL STONE MOUND 3' W.  
N 269074.89  
E 2582989.55

FD 8"x6" BASALT STONE  
UP 0.4" W/1/4" ON N. FACE  
W/2" DIA. 1' HIGH MOUND  
OF STONES ON N. SIDE  
N 269065.37  
E 2585642.22



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Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 7-8-98  
DEA Job No. COEX0302

## LEGAL DESCRIPTION

BI

### Site BI

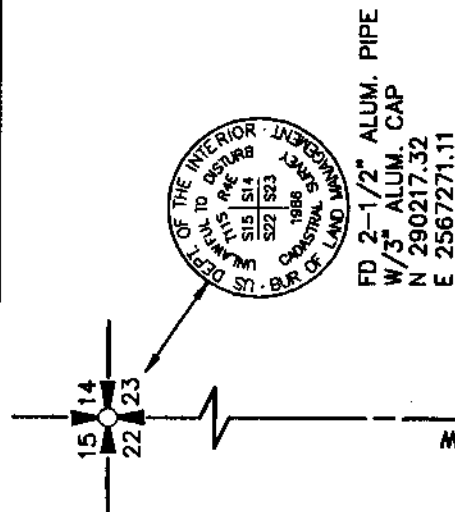
A tract of land lying in the southwest one-quarter of Section 23, Township 11 South, Range 4 East of the Boise Meridian, Owyhee County, Idaho, more particularly described as follows:

Beginning at a point that bears South 32° 20' 48" East a distance of 1,474.25 feet from the west quarter-section corner of Section 23, Township 11 South, Range 4 East, Boise Meridian; thence South 40° 56' 54" East a distance of 208.71 feet; thence South 49° 03' 06" West a distance of 208.71 feet; thence North 40° 56' 54" West a distance of 208.71 feet; thence North 49° 03' 06" East a distance of 208.71 feet to the point of beginning.

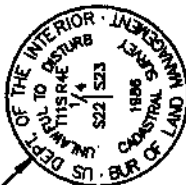
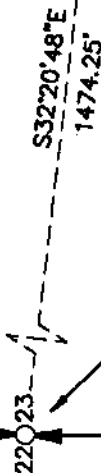
Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999697.

The tract of land to which this description applies contains 1.000 acres, more or less.

S.W. 1/4, SEC. 23, TWP. 11 S., RNG. 4 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO  
JULY 8, 1998



FD 2-1/2" ALUM. PIPE  
W/3" ALUM. CAP  
N 290217.32  
E 2567271.11



FD 2-1/2" ALUM. PIPE  
W/3" ALUM. CAP  
N 287574.20  
E 2567261.07

FD 1/2" REBAR AT  
SOUTHERLY CORNER SITE BI  
N 286034.76  
E 2568028.77



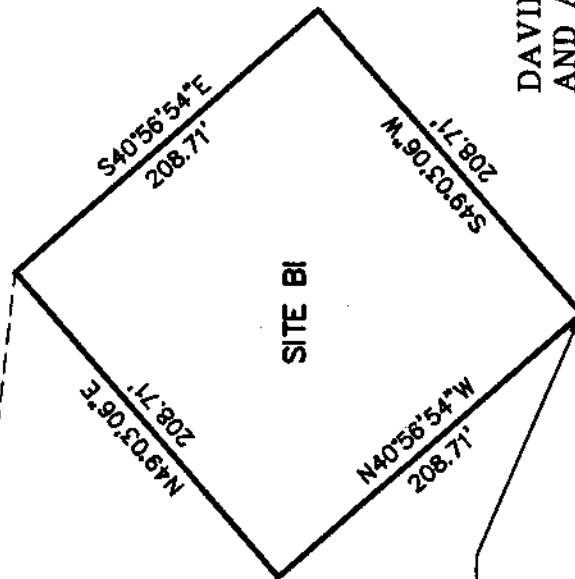
### LEGEND

- SET 5/8" x 30"  
IRON ROD W/  
YELLOW PLASTIC  
CAP STAMPED "DEA  
INC." AS REFERENCE.

ALUM. ALUMINUM  
SEC. SECTION  
TWP. TOWNSHIP  
RNG. RANGE  
FD FOUND

### NOTES

1. COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
2. DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999697.





**DAVID EVANS  
AND ASSOCIATES,  
INC.**

416 - 118TH AVENUE S.E.  
BELLEVUE, WA. 98005-3518 (425) 619-6500



MOUNTAIN HOME AFB

ETI

New Portion of Access Road from site BI to  
site ND5

Site BI

7.25 Acres±

## LEGAL DESCRIPTION

### Road BI / ND5 New at Sites

A 100-foot wide strip of land lying in the southwest quarter of Section 23, Township 11 South, Range 4 East, of the Boise Meridian, Awyee County, Idaho, being 50.00 feet on each side of the following described centerline:

**BEGINNING** at a point that bears South 29°41'11" East, a distance of 1485.82 feet from the west quarter-section corner of said Section 23, said point of beginning, shown as Point 1 on map, is a point on the northwesterly line of Site BI and is South 49°03'24" West, a distance of 69.75 feet from the northerly corner of Site BI, said Point 1 having coordinates of north 286,283.40 and east 2,567,996.92; thence North 3°15'24" East, a distance of 380.56 feet to the intersection with an existing track road, shown as Point 2 on map; thence generally along the existing road, North 85°57'48" East, a distance of 157.32 feet, shown as Point 3 on map; thence South 74°06'52" East, a distance of 117.39 feet, shown as Point 4 on map; thence South 70°11'44" East, a distance of 130.97 feet, shown as Point 5 on map; thence South 82°10'35" East, a

Mountain Home ETI  
Road BI, New and Improvement

Site BI  
7.25 Acres±

distance of 105.09 feet, shown as Point 6 on map; thence South  $86^{\circ}31'19''$  East, a distance of 150.16 feet, shown as Point 7 on map; thence South  $89^{\circ}09'15''$  East, a distance of 704.61 feet, shown as Point 8 on map, thence South  $10^{\circ}23'13''$  west, a distance of 1171.98 feet, shown as Point 9 on map; thence South  $08^{\circ}36'57''$  east, a distance of 466.52 feet, shown as Point 10 on map and the **TERMINUS** having a coordinate of north 284,950.07 and east 2,569,228.72.

Contains 7.25 acres, more or less.

Bearings of this description are based on True North. This Description is based on a survey map by Bureau of Land Management, dated 2 Aug 99, Drawing No. BI.

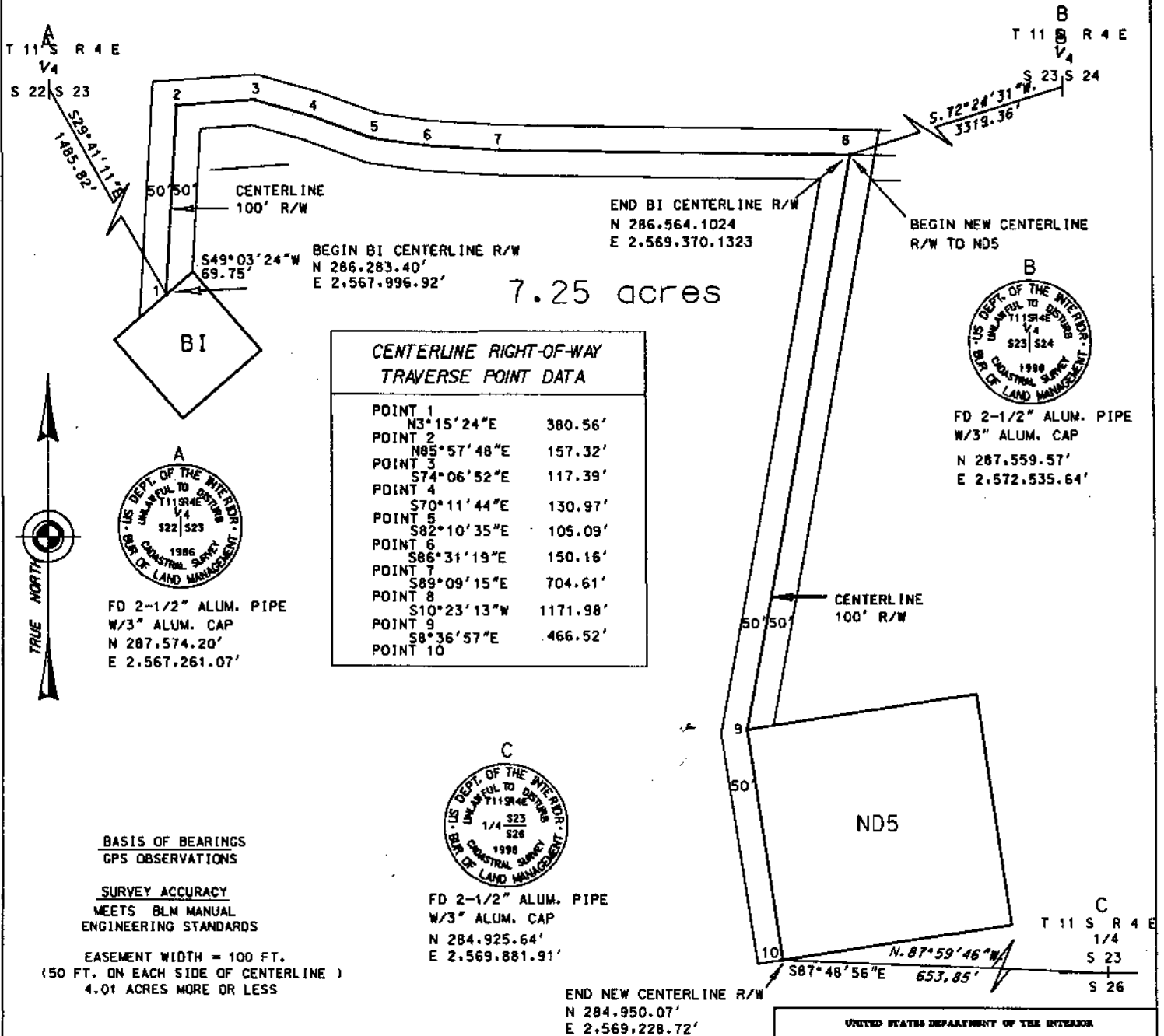
By: RFG 24 Nov 99  
Chkd: WK 24 Nov 99  
Map: SE-RE-  
Cadd: mc\mh\re\pc\eti\road\_bi\_nd5\_new\_sites.dgn  
Revised:  
Doc: 001491.doc

# ACCESS RIGHT-OF-WAY, NEW BI AND NEW ND5

T. 11 S., R. 4 E. B.M.

SECTION 23

OWYHEE COUNTY, IDAHO



Page 2 of 4 Deleted



LEGAL DESCRIPTION- Continued  
BI

Road BI, New

*- See revised description*

~~A 100-foot wide strip of land lying in the southwest one quarter of Section 23, Township 11 South, Range 4 East, of the Boise Meridian, Owyhee County, Idaho, being 50.00 feet on each side of the following described centerline.~~

~~Commencing at a point that bears South 32° 20' 48" East a distance of 1,474.25 feet from the west quarter section corner of Section 23, Township 11 South, Range 4 East, Boise Meridian, said point of commencement being the northerly corner of Site BI; thence tracing the northeasterly line of Site BI South 40° 56' 54" East a distance of 208.71 feet to the easterly corner thereof; thence tracing the southeasterly line of Site BI South 49° 03' 06" West a distance of 157.67 feet to the true point of beginning of this centerline description; thence South 29° 21' 26" East a distance of 212.21 feet; thence South 36° 55' 47" East a distance of 326.93 feet; thence South 57° 22' 58" East a distance of 321.84 feet; thence South 72° 09' 22" East a distance of 222.59 feet; thence North 81° 51' 00" East a distance of 300.88 feet to the northwesterly corner of Site ND5 (from which the westerly line of Site ND5 bears South 8° 37' 04" East a distance of 466.69 feet and the northerly line of Site ND5 bears North 81° 22' 58" East a distance of 466.69 feet); thence North 10° 23' 13" East a distance of 1,172.34 feet to a terminus point in an existing road, said terminus point bears South 64° 24' 31" East a distance of 2,339.18 feet from said west quarter-section corner of Section 23.~~

~~The sidelines of said strip of land are to be extended or shortened to begin on the southeasterly line of Site BI.~~

~~EXCEPTING THEREFROM ND5, the northwesterly corner and westerly and northerly lines thereof being noted in the above centerline description, and the right-of-way, if any, of said existing road.~~

~~Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999697.~~

~~The tract of land to which this description applies contains 5.86 acres, more or less.~~

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page "2"*

Page 2 of 4

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## LEGAL DESCRIPTION

### ROAD BI NEW

A 100-foot wide strip of land lying in the southwest quarter of Section 23, Township 11 South, Range 4 East, of the Boise Meridian, Awyee County, Idaho, being 50.00 feet on each side of the following described centerline:

**BEGINNING** at a point that bears South 29°49'44" East, a distance of 1486.28 feet from the west quarter-section corner of said Section 23, said point of beginning, shown as Point 1 on map, is a point on the northwesterly line of Site BI and is South 48°54'36" West, a distance of 69.77 feet from the northerly corner of Site BI; thence North 3°06'51" East, a distance of 380.69 feet to the intersection with an existing track road, shown as Point 2 on map; thence generally along the existing road, North 85°49'22" East, a distance of 157.37 feet, shown as Point 3 on map; thence South 74°15'20" East, a distance of 117.42 feet, shown as Point 4 on map; thence South 70°20'11" East, a distance of 131.01 feet, shown as Point 5 on map; thence South 82°19'01" East, a distance of 105.12 feet, shown as Point 6 on map; thence South 86°39'43" East, a distance of 150.21 feet, shown as Point 7 on map; thence South 89°17'36" East, a distance of 704.82 feet, shown as Point 8 on map to the **TERMINUS**,

**Mountain Home ETI**  
**Road BI, New and Improvement**

**Site BI**  
**4.01 Acres±**

and the intersection with the new road to site ND-5, said terminus point bears South 64°32'59" East, a distance of 2,339.19 feet from said west quarter-section corner of Section 23. The sidelines of said strip of land are to be extended or shortened to begin on the northwesterly line of Site BI.

Contains 4.01 acres, more or less.

Bearings of this description are based on True North. This Description is based on a survey map by Bureau of Land Management, dated 2 Aug 99, Drawing No. BI.

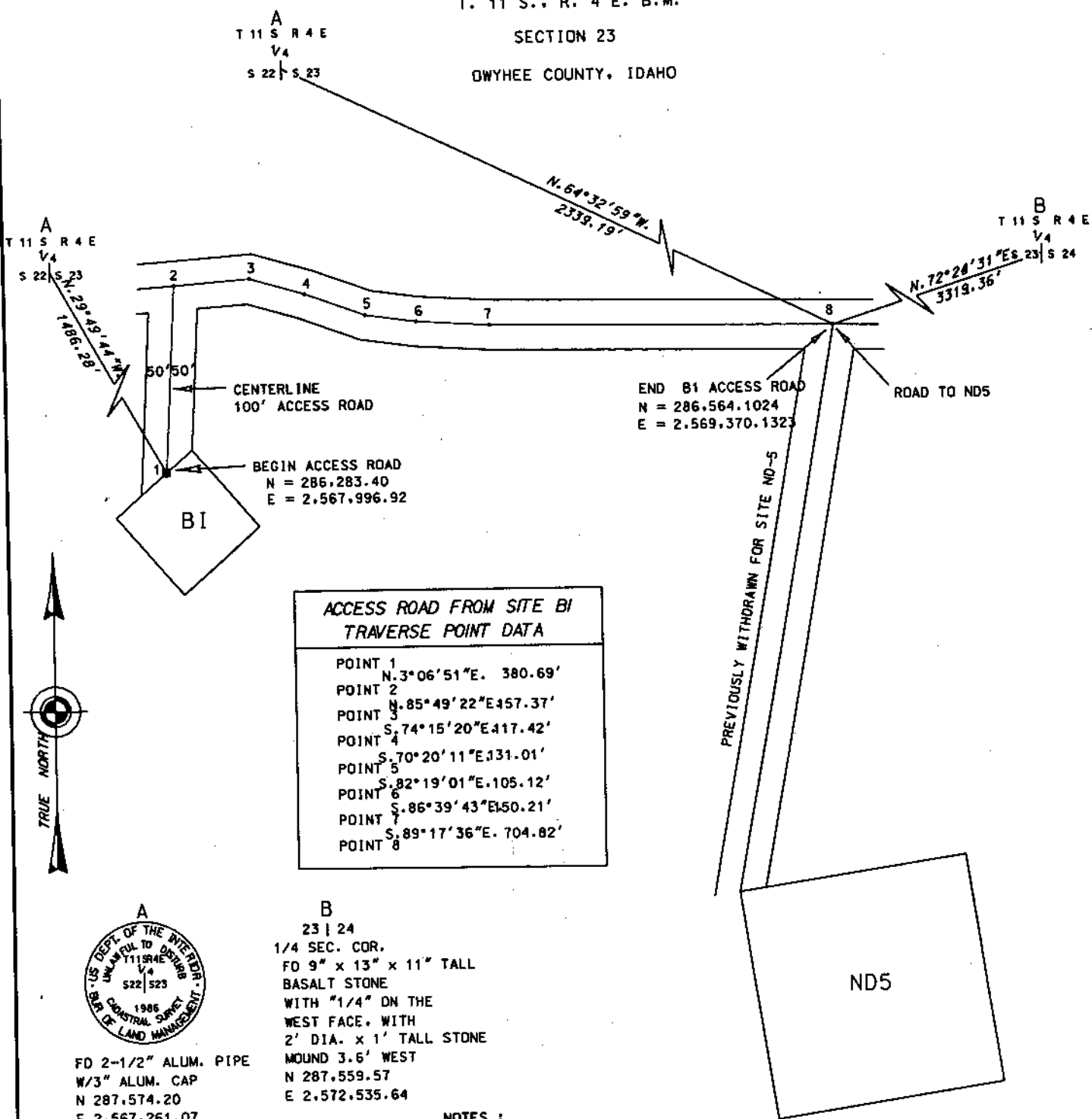
By: RFG 13 Aug 99  
Chkd: SDM 13 Aug 99  
Map: SE-RE-  
Cadd: mc/mh/re/pc/eti/access\_B1.dgn  
Revsd:  
Doc: 001491.doc

# ROAD B1 NEW

T. 11 S., R. 4 E. B.M.

SECTION 23

OWYHEE COUNTY, IDAHO



## ACCESS ROAD FROM SITE BI TRAVERSE POINT DATA

POINT 1 N. 3° 06' 51" E. 380.69'  
POINT 2 N. 85° 49' 22" E. 457.37'  
POINT 3 S. 74° 15' 20" E. 417.42'  
POINT 4 S. 70° 20' 11" E. 131.01'  
POINT 5 S. 82° 19' 01" E. 105.12'  
POINT 6 S. 86° 39' 43" E. 150.21'  
POINT 7 S. 89° 17' 36" E. 704.82'  
POINT 8

B  
23 | 24  
1/4 SEC. COR.  
FO 9" x 13" x 11" TALL  
BASALT STONE  
WITH "1/4" ON THE  
WEST FACE. WITH  
2' DIA. x 1' TALL STONE  
MOUND 3.6' WEST  
N 287,559.57  
E 2,572,535.64

### NOTES :

- COORDINATES ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
- DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999697. BEARINGS ARE BASED ON TRUE NORTH.

BASIS OF BEARINGS  
GPS OBSERVATIONS

SURVEY ACCURACY  
MEETS BLM MANUAL  
ENGINEERING STANDARDS

EASEMENT WIDTH = 100 FT.  
(50 FT. ON EACH SIDE OF CENTERLINE )  
4.01 ACRES MORE OR LESS

300' 150' 0 300'  
SCALE IN FEET



**LEGAL DESCRIPTION- Continued**  
**BI**

**Road BI, Improvement**

A 100-foot wide strip of land lying in the southwest, southeast, and northeast one-quarters of Section 23, the northwest and northeast one-quarters of Section 24, and the southeast one-quarter of Section 13, Township 11 South, Range 4 East and the southwest, southeast, and northeast one-quarters of Section 18, the northwest and northeast one-quarters of Section 17, and the southeast one-quarter of Section 8, Township 11 South, Range 5 East of the Boise Meridian, Owyhee County, Idaho, being 50.00 feet on each side of the following described centerline.

Beginning at a point that bears South 64° 24' 31" East a distance of 2,339.18 feet from the west quarter-section corner of Section 23, Township 11 South, Range 4 East, Boise Meridian, being a point in an existing road and the terminus point of Road BI, New as described above; thence generally along the existing road South 88° 41' 46" East a distance of 456.42 feet; thence North 60° 33' 16" East a distance of 1,201.53 feet; thence North 75° 01' 00" East a distance of 655.09 feet; thence North 63° 01' 19" East a distance of 1,233.41 feet; thence North 67° 21' 55" East a distance of 596.32 feet; thence North 56° 33' 57" East a distance of 744.87 feet; thence North 61° 06' 13" East a distance of 616.55 feet; thence North 80° 04' 20" East a distance of 462.78 feet; thence South 85° 44' 43" East a distance of 109.86 feet; thence North 70° 07' 47" East a distance of 294.93 feet; thence North 56° 50' 24" East a distance of 1,292.05 feet; thence North 47° 42' 18" East a distance of 464.52 feet; thence North 61° 59' 46" East a distance of 723.88 feet; thence North 73° 53' 07" East a distance of 463.98 feet; thence North 61° 29' 30" East a distance of 593.48 feet; thence North 70° 48' 56" East a distance of 290.03 feet; thence North 56° 47' 55" East a distance of 522.54 feet; thence North 66° 55' 05" East a distance of 332.44 feet; thence North 45° 30' 40" East a distance of 791.41 feet; thence North 55° 25' 45" East a distance of 1,056.66 feet; thence North 60° 04' 46" East a distance of 1,096.39 feet; thence North 67° 48' 34" East a distance of 1,869.53 feet; thence North 64° 37' 36" East a distance of 2,177.17 feet; thence North 81° 33' 46" East a distance of 199.79 feet to a point of curvature; thence along the arc of a 1,000.00 foot radius curve to the left, through a central angle of 47° 52' 51", an arc distance of 835.68 feet (the long chord bears North 57° 37' 20" East a distance of 811.57 feet) to a point of tangency; thence North 33° 40' 55" East a distance of 485.87 feet; ~~thence North 11° 58' 14" East a distance of 730.01 feet to a terminus point in Idaho State Highway 51, said terminus point bears North 49° 17' 47" East a distance of 1,154.81 feet from the south quarter section corner of Section 8, Township 11 South, Range 5 East, Boise Meridian.~~





**LEGAL DESCRIPTION- Continued**  
**BI**

The sidelines of said strip of land are to be extended or shortened to begin on the extended or shortened lines of Road BI, New, as described herein and end on the westerly right-of-way line of Idaho State Highway 51. *at BI and NDS sites*

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999697.

The tract of land to which this description applies contains ~~45.61~~ acres, more or less.



o:\projSAFE\c\coex0302\coex-bi.rv1

# ACCESS ROAD TO SITE BI AND NO-DROP SITE 5

SEC. 13, 23, AND 24, TWP. 11 S., RNG. 4 E.,  
SEC. 8, 17, AND 18, TWP. 11 S., RNG. 5 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO

JULY 8, 1998

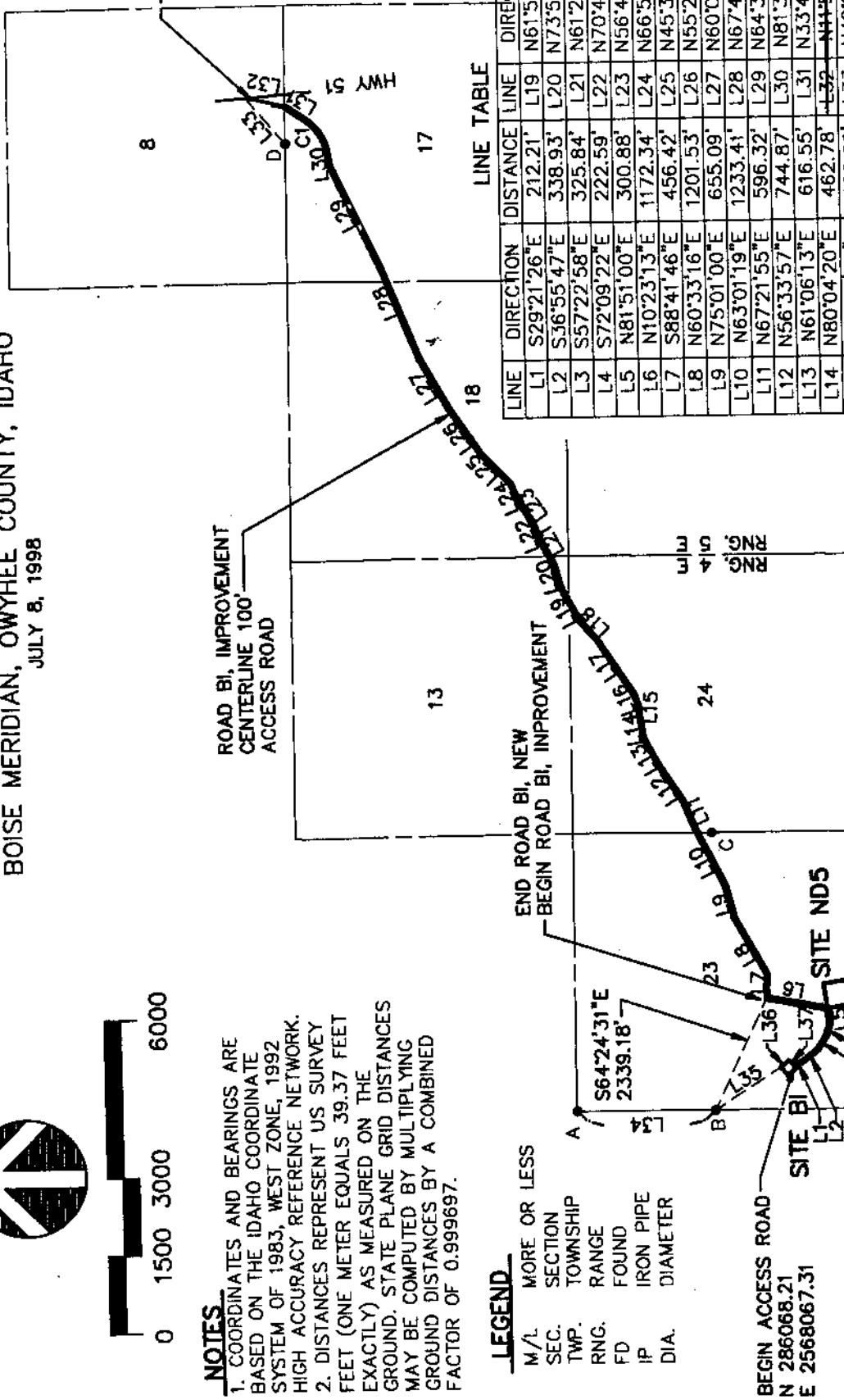


## NOTES

- COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
- DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999697.

## LEGEND

M/L MORE OR LESS  
SEC. SECTION  
TWP. TOWNSHIP  
RNG. RANGE  
FD FOUND  
IP IRON PIPE  
DIA. DIAMETER

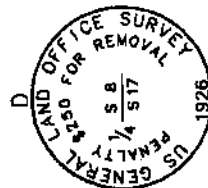


LINE TABLE

LINE	DIRECTION	DISTANCE	LINE	DIRECTION	DISTANCE
L1	S29°21'26"E	212.21'	L19	N61°59'46"E	723.88'
L2	S36°55'47"E	338.93'	L20	N73°53'07"E	463.98'
L3	S57°22'58"E	325.84'	L21	N61°29'30"E	593.48'
L4	S72°09'22"E	222.59'	L22	N70°48'56"E	290.03'
L5	N81°51'00"E	300.88'	L23	N56°47'55"E	522.54'
L6	N10°23'13"E	1172.34'	L24	N66°55'05"E	332.44'
L7	S88°41'46"E	456.42'	L25	N45°30'40"E	791.41'
L8	N60°33'16"E	1201.53'	L26	N55°25'45"E	1056.66'
L9	N75°01'00"E	655.09'	L27	N60°04'46"E	1096.39'
L10	N63°01'19"E	1233.41'	L28	N67°48'34"E	1869.53'
L11	N67°21'55"E	596.32'	L29	N64°37'36"E	2177.17'
L12	N56°33'57"E	744.87'	L30	N81°33'46"E	199.79'
L13	N61°06'13"E	616.55'	L31	N33°40'55"E	485.87'
L14	N80°04'20"E	462.78'	L32	N41°58'44"E	736.04'
L15	S85°44'23"E	109.86'	L33	N49°17'47"E	1154.81'
L16	N70°07'47"E	294.93'	L34	N00°13'04"E	2643.95'
L17	N56°50'24"E	1292.05'	L35	S32°20'48"E	1474.25'
L18	N47°42'18"E	464.52'	L36	S40°56'54"E	208.71'
			L37	S49°03'06"W	157.67'

CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA
C1	1000.00'	835.68'	47°52'51"



C  
FD 9' x 13' x 11" TALL  
BASALT STONE  
WITH 1/4" ON THE  
WEST FACE, WITH  
2" DIA. x 1' TALL STONE  
MOUND 3.6' WEST  
N 287559.57  
E 2572535.64



A  
FD 2-1/2" ALUM. PIPE  
W/3" ALUM. CAP  
N 290217.32  
E 2567271.11

DAVID EVANS  
AND ASSOCIATES, INC.

415 - 118TH AVENUE S.E.  
BELLEVUE, WA 98006-3518 (425) 519-6500

FD 1" IP W/  
2-1/2" BRASS CAP  
N 295432.66  
E 2585714.58

FD 2-1/2" ALUM. PIPE  
W/3" ALUM. CAP  
N 287574.20  
E 2567261.07



MOUNTAIN HOME AFB

(2.06 acres ±)

ETI

New Portion of Access Road from site BI  
to site ND5

**LEGAL DESCRIPTION**

Road BI New at Hwy 51

A 100-foot wide strip of land lying within the existing right-of-way of State Highway 51, in southeast quarter of Section 8, Township 11 South, Range 4 East, Boise Meridian, Idaho, being 50.00 feet on each side of the following described centerline.

**BEGINNING** at a point that bears North 45°59'33" East, 1197.26 feet, more or less from the 1/4 section corner of Sections 8, said Point of Beginning having a coordinate position of North 296,264.46 and East 2,586,575.71 also lying on the asbuilt centerline of State Highway 51; thence South 85°36'12" West, a distance of 64.53 feet to the beginning of a tangent curve, concave to the southeast, having a radius of 59.98 feet; thence southwesterly 94.21 feet along said curve through a central angle of 94°31'15" to the end of said curve; thence South 4°23'46" East, a distance of 470.76 feet; thence South 11°57'55" West, a distance of 267.84 feet, more or less to the **TERMINUS** and the intersection with the westerly right-of-way of State Highway 51, said terminus point bears North 87°32'16" East, a distance of 722.81 feet from the 1/4 section corner of said Sections 8 and has a coordinate of north 295,463.71 and east 2,586,436.72.

MOUNTAIN HOME AFB

(2.06 acres  $\pm$ )

ETI

New Portion of Access Road from site BI  
to site ND5

The sides of the strip are prolonged or shortened to intersect with the right of way lines of the existing access road.

Bearings of this description are based on State Plane Coordinates NAD83.

Contains 2.06 acres more or less, of which 1.96 acres falls within the right-of-way of State Highway 51, and 0.10 acres falls outside of said right-of-way.

By: RFG 24 Nov 99

Chkd: WK 24 Nov 99

Map:

Cadd: ms\mh\re\pc\eti\new\_access\_bi\_hwy51

Rev:

Doc: 001513.DOC

**REVISED RIGHT-OF-WAY FOR  
INGRESS-EGRESS TO SITES ND5 AND BI ACCESS ROAD  
T.11 S., R.4 E.B.M.  
SECTION 8  
OWYHEE COUNTY, IDAHO**

**NOTES :**

1. COORDINATES ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK. BEARINGS ARE BASED ON GRID NORTH.



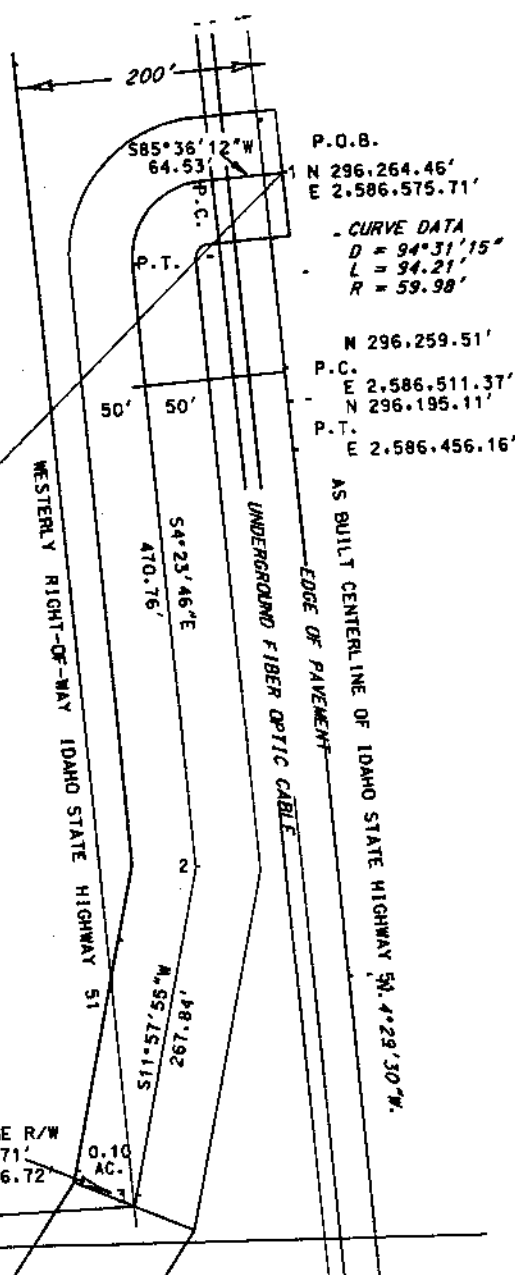
2.06 acres

T 11 S R 4 E  
1/4  
Sec. Cor  
Sec. 8  
Sec. 17

END CENTERLINE R/W  
N 295.463.71'  
E 2,586.436.72'

N87°32'16"E 722.81'

ACCESS ROAD R/W  
TO  
SITES ND5 AND BI



FD, 1" IP W/  
2-1/2" BRASS CAP  
N 295.432.66'  
E 2,585.714.58'

**BASIS OF BEARINGS**  
GPS OBSERVATIONS  
  
**SURVEY ACCURACY**  
MEETS BLM MANUAL  
ENGINEERING STANDARDS

EASEMENT WIDTH = 100 FT.  
(50 FT. ON EACH SIDE OF CENTERLINE )  
1.96 ACRES MORE OR LESS WITHIN S.H. 51 R/W  
0.10 ACRES MORE OR LESS OUTSIDE OF S.H. 51 R/W

150' 75' 0 150'

SCALE IN FEET

FILE: J:\mc\m\red\st\pc\ETI\new\_access\_bi\_hwy51.dgn

DATE: 30-Nov-99 14:56

**UNITED STATES DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT**

INGRESS/EGRESS TO SITES ND5 AND BI ACCESS ROAD

REVIEWED: JEFF LEE

APPROVED: DUANE OLSEN

SURVEYED BY BELLE CRAIG

PROPERTY OWNER: U.S. GOVERNMENT

TOWNSHIP	RANGE	MERIDIAN	SECTION	COUNTY
11 S.	4 E.	BOISE	8	OWYHEE

DATE: NOVEMBER 3, 1999

DRAWING No. INGRESS/EGRESS SHEET 1 OF 1



DAVID EVANS AND ASSOCIATES, INC.

415-118th Avenue S.E.

Bellevue, Washington 98005

Tel: 425.519.6500

Fax: 425.519.5361

Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 10-15-98  
DEA Job No. COEX0302

LEGAL DESCRIPTION  
BJ-State

Site BJ

A tract of land lying in the northeast one-quarter of Section 36, Township 13 South, Range 9 East of the Boise Meridian, Owyhee County, Idaho, more particularly described as follows:

Beginning at a point that bears South  $86^{\circ} 57' 07''$  East a distance of 859.68 feet from the north quarter-section corner of Section 36, Township 13 South, Range 9 East, Boise Meridian; thence South  $74^{\circ} 23' 49''$  East a distance of 208.71 feet; thence South  $15^{\circ} 36' 11''$  West a distance of 208.71 feet; thence North  $74^{\circ} 23' 49''$  West a distance of 208.71 feet; thence North  $15^{\circ} 36' 11''$  East a distance of 208.71 feet to the point of beginning.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999700.

The tract of land to which this description applies contains 1.000 acres, more or less.



LEGAL DESCRIPTION- Continued  
BJ-State

**Road BJ, New**

A 100-foot wide strip of land lying in the northeast and southeast one-quarters of Section 36, Township 13 South, Range 9 East, of the Boise Meridian, Owyhee County, Idaho, being 50.00 feet on each side of the following described centerline.

Commencing at a point that bears South 86° 57' 07" East a distance of 859.68 feet from the north quarter-section corner of Section 36, Township 13 South, Range 9 East, Boise Meridian, said point of commencement being the northwesterly corner of Site BJ; thence tracing the northerly line of Site BJ South 74° 23' 49" East a distance of 208.71 feet to the northeasterly corner thereof; thence tracing the easterly line of Site BJ South 15° 36' 11" West a distance of 156.02 feet to the true point of beginning of this centerline description; thence South 71° 02' 50" East a distance of 426.47 feet; thence South 85° 35' 09" East a distance of 179.07 feet to a point of curvature; thence along the arc of a 300.00 foot radius curve to the right, through a central angle of 70° 16' 54", an arc distance of 367.99 feet (the long chord bears South 50° 26' 42" East a distance of 345.35 feet) to a point of tangency; thence South 15° 18' 15" East a distance of 219.31 feet; thence South 0° 10' 53" East a distance of 460.57 feet; thence South 16° 07' 48" West a distance of 972.82 feet; thence South 27° 29' 06" West a distance of 389.40 feet; thence South 8° 31' 41" West a distance of 1,566.15 feet; thence South 2° 49' 27" East a distance of 962.31 feet; thence South 16° 02' 59" West a distance of 177.67 feet to a terminus point in an existing road, said terminus point bears North 89° 19' 52" East a distance of 1,213.18 feet from the south quarter-section corner of Section 36, Township 13 South, Range 9 East, Boise Meridian.

The sidelines of said strip of land are to be extended or shortened to begin on the easterly line of Site BJ and end on the northerly right-of-way line, if any, of said existing road.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999700.

The tract of land to which this description applies contains 13.13 acres, more or less.



LEGAL DESCRIPTION- Continued  
BJ-State

**Road BJ, Improvement, State Ownership**

A 100-foot wide strip of land lying in the southeast and southwest one-quarters of Section 36, Township 13 South, Range 9 East of the Boise Meridian, Owyhee County, Idaho, being 50.00 feet on each side of the following described centerline.

Beginning at a point that bears North  $89^{\circ} 19' 52''$  East a distance of 1,213.18 feet from the south quarter-section corner of Section 36, Township 13 South, Range 9 East, Boise Meridian, being a point in an existing road and the terminus point of Road BJ, New (the last course of which bears South  $16^{\circ} 02' 59''$  West a distance of 177.67 feet); thence generally along the existing road North  $80^{\circ} 39' 00''$  West a distance of 114.66 feet; thence North  $89^{\circ} 18' 47''$  West a distance of 1,555.32 feet; thence South  $88^{\circ} 57' 25''$  West a distance of 2,257.79 feet to a terminus point in an existing road sometimes known as Clover Three Creek Road, said terminus point bears North  $61^{\circ} 46' 56''$  West a distance of 79.71 feet from the southeast corner of Section 35, Township 13 South, Range 9 East, Boise Meridian:

The sidelines of said strip of land are to be extended or shortened to begin on the extended or shortened lines of Road BJ, New, the terminus of which is noted in the above centerline description, and end on the easterly right-of-way line, if any, of the existing road sometimes known as Clover Three Creek Road.

EXCEPTING THEREFROM the portion of said 100-foot wide strip lying outside Section 36, Township 13 South, Range 9 East, Boise Meridian.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999700.

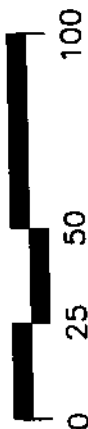
The tract of land to which this description applies contains 8.16 acres, more or less.



O:\projSAFE\c\coex0302\legals\coex-bjs.rv1



N.E. 1/4, SEC. 36, TWP. 13 S., RNG. 9 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO  
OCTOBER 15, 1998



	SECTION
	TOWNSHIP
	RANGE
	FOUND
	IRON PIPE

**1. COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.**

**2. DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999700.**

**DAVID EVANS  
AND ASSOCIATE**

415 - 118TH AVENUE S.E.  
BELLEVUE, WA. 98005-3518 (425) 519-8500



17



SEC. 35 & 36, TWP. 13 S., RNG. 9 E., SEC. 1 & 2, TWP. 14 S., RNG. 9 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO

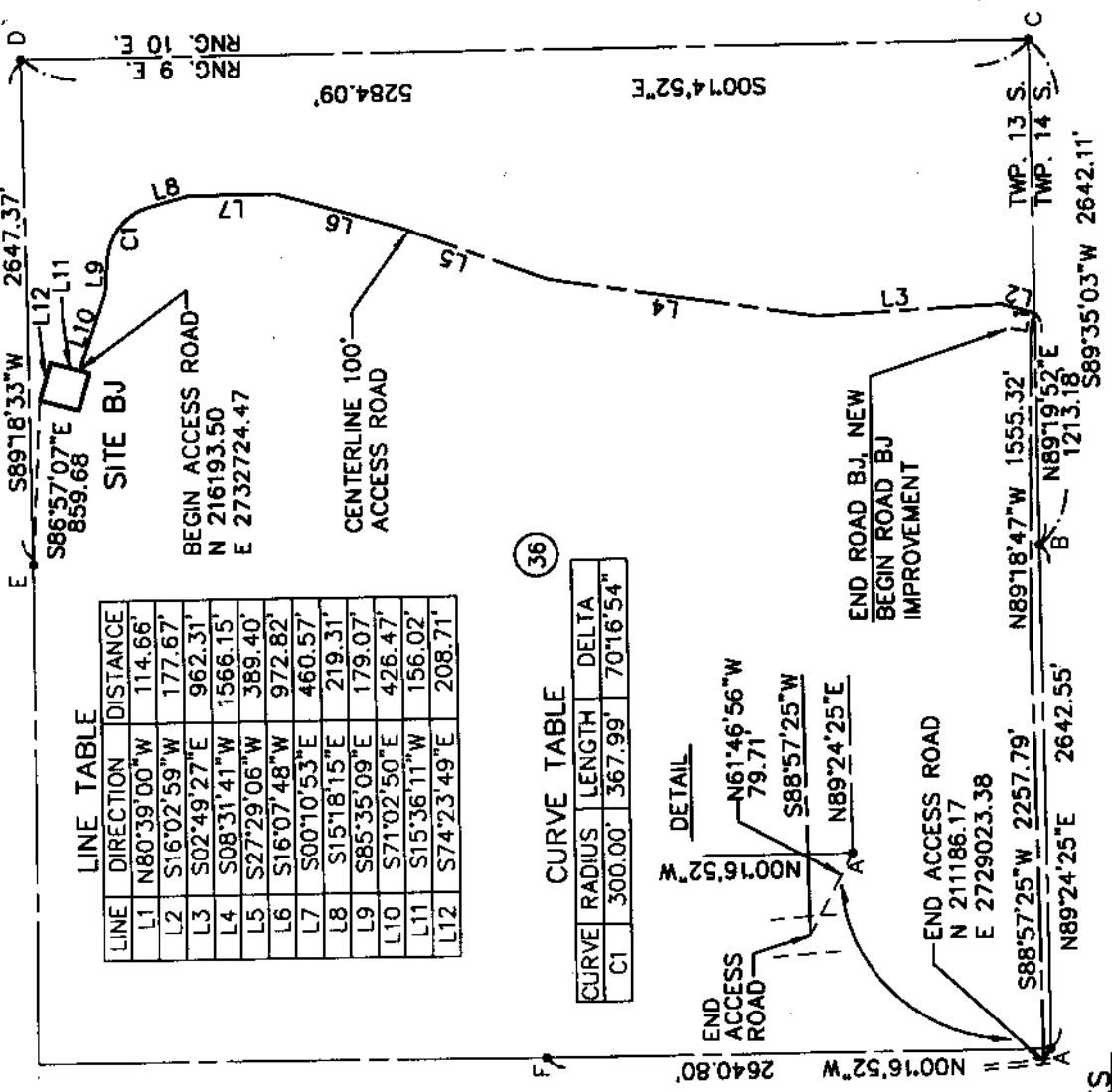
OCTOBER 15, 1998

LINE TABLE

LINE	DIRECTION	DISTANCE
L1	N80°39'00"W	114.66'
L2	S16°02'59"W	177.67'
L3	S02°49'27"E	962.31'
L4	S08°31'41"W	1566.15'
L5	S27°29'06"W	389.40'
L6	S16°07'48"W	972.82'
L7	S00°10'53"E	460.57'
L8	S15°18'15"E	219.31'
L9	S85°35'09"E	179.07'
L10	S71°02'50"E	426.47'
L11	S15°36'11"W	156.02'
L12	S74°23'49"E	208.71'

CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA
C1	300.00'	367.99'	70°16'54"

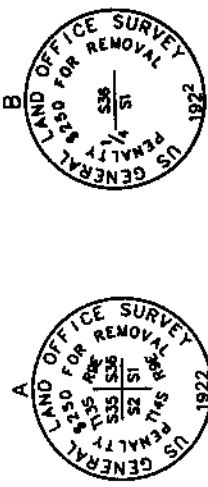


LEGEND

SEC. SECTION  
TWP. TOWNSHIP  
RNG. RANGE  
FD FOUND  
IP IRON PIPE

NOTES

- COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
- DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999700.



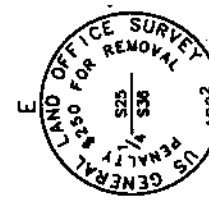
FD 2" IP W/2-1/2" BRASS CAP  
N 211148.49  
E 2729093.60



FD 2-1/2" IP W/ 3" BRASS CAP  
N 211195.00  
E 2734376.48



FD 2-1/2" IP W/ 3" BRASS CAP  
N 216477.45  
E 2734353.63



FD 1" IP W/2-1/2" BRASS CAP  
N 216445.55  
E 2731707.25



FD 1" IP W/2-1/2" BRASS CAP  
N 213788.47  
E 2729080.65



DAVID EVANS  
AND ASSOCIATES, INC.  
415 - 118TH AVENUE S.E.  
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**DAVID EVANS AND ASSOCIATES, INC.**

415-118th Avenue S.E.

Bellevue, Washington 98005

Tel: 425-519-6500

Fax: 425-519-5361

Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 10-15-98  
DEA Job No. COEX0302

**LEGAL DESCRIPTION**  
BJ-Federal

**Road BJ, Improvement, Federal Ownership**

A 100-foot wide strip of land lying in the southeast one-quarter of Section 35, Township 13 South, Range 9 East, and in the northeast one-quarter of Section 2 and the northwest and northeast one-quarters of Section 1, Township 14 South, Range 9 East of the Boise Meridian, Owyhee County, Idaho, being 50.00 feet on each side of the following described centerline.

Beginning at a point that bears North 89° 19' 52" East a distance of 1,213.18 feet from the south quarter-section corner of Section 36, Township 13 South, Range 9 East, Boise Meridian, being a point in an existing road and the terminus point of Road BJ, New (the last course of which bears South 16° 02' 59" West a distance of 177.67 feet); thence generally along the existing road North 80° 39' 00" West a distance of 114.66 feet; thence North 89° 18' 47" West a distance of 1,555.32 feet; thence South 88° 57' 25" West a distance of 2,257.79 feet to a terminus point in an existing road sometimes known as Clover Three Creek Road, said terminus point bears North 61° 46' 56" West a distance of 79.71 feet from the southeast corner of Section 35, Township 13 South, Range 9 East, Boise Meridian.

The sidelines of said strip of land are to be extended or shortened to begin on the extended or shortened lines of Road BJ, New, the terminus of which is noted in the above centerline description, and end on the easterly right-of-way line, if any, of the existing road sometimes known as Clover Three Creek Road.

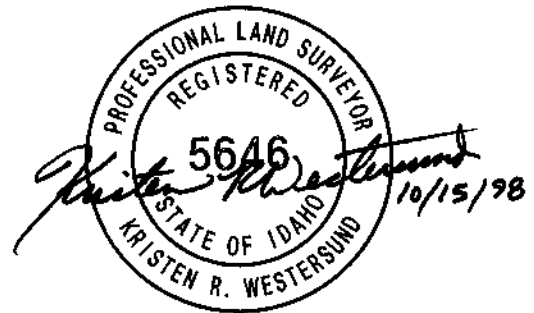
EXCEPTING THEREFROM the portion of said 100-foot wide strip lying within Section 36, Township 13 South, Range 9 East, Boise Meridian (which is vested in the State of Idaho).



LEGAL DESCRIPTION- Continued  
BJ-Federal

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999700.

The tract of land to which this description applies contains 0.80 acres, more or less.





SEC. 35 & 36, TWP. 13 S., RNG. 9 E.,  
ACCESS ROAD TO SITE BJ  
SEC. 1 & 2, TWP. 14 S., RNG. 9 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO

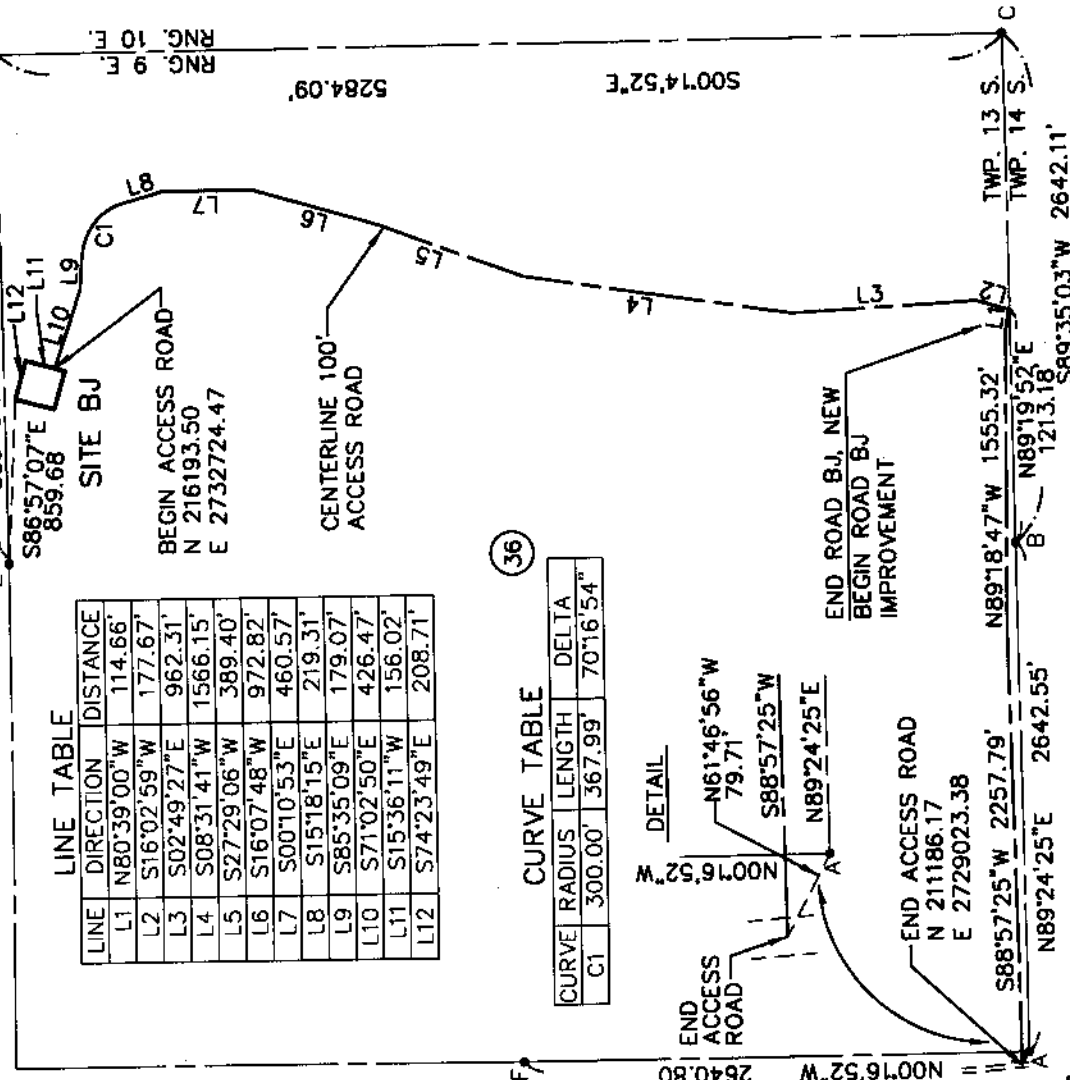
OCTOBER 15, 1998

LINE TABLE

LINE	DIRECTION	DISTANCE
L1	N80°39'00"W	114.66'
L2	S16°02'59"W	177.67'
L3	S02°49'27"E	962.31'
L4	S08°31'41"W	1566.15'
L5	S27°29'06"W	389.40'
L6	S16°07'48"W	972.82'
L7	S00°10'53"E	460.57'
L8	S15°18'15"E	219.31'
L9	S85°35'09"E	179.07'
L10	S71°02'50"E	426.47'
L11	S15°36'11"W	156.02'
L12	S74°23'49"E	208.71'

CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA
C1	300.00'	367.99'	70°16'54"

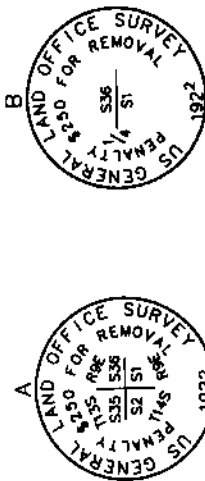


# NOTES

- COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
- DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999700.

## LEGEND

SEC.	SECTION
TWP.	TOWNSHIP
RNG.	RANGE
FD	FOUND
IP	IRON PIPE



FD 2" IP W/2-1/2"  
BRASS CAP  
N 211148.49  
E 2729093.60



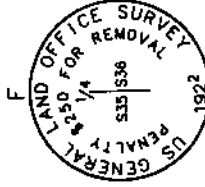
FD 2-1/2" IP W/  
3" BRASS CAP  
N 211195.00  
E 2734376.48



FD 2-1/2" IP W/  
3" BRASS CAP  
N 216477.45  
E 2734353.63



FD 1" IP W/2-1/2"  
BRASS CAP  
N 216445.55  
E 2731707.25



FD 1" IP W/2-1/2"  
BRASS CAP  
N 213788.47  
E 2729080.65

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Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 6-30-98  
DEA Job No. COEX0302

LEGAL DESCRIPTION  
BK

Site BK

A tract of land lying in the southwest one-quarter of Section 7, Township 8 South, Range 13 East of the Boise Meridian, Twin Falls County, Idaho more particularly described as follows:

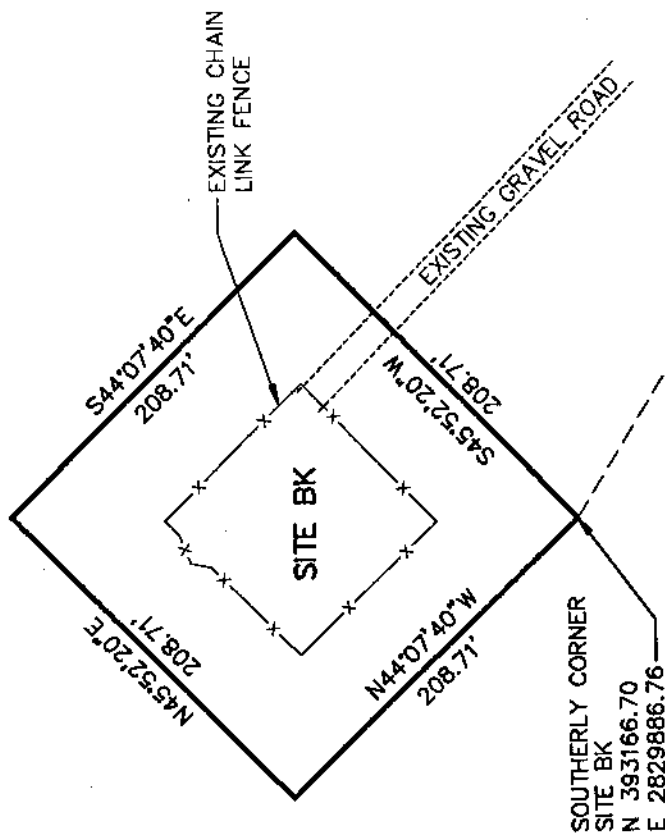
Beginning at a point that bears North 57° 44' 38" West a distance of 2,354.20 feet from the south quarter-section corner of Section 7, Township 8 South, Range 13 East, Boise Meridian; thence North 44° 07' 40" West a distance of 208.71 feet; thence North 45° 52' 20" East a distance of 208.71 feet; thence South 44° 07' 40" East a distance of 208.71 feet; thence South 45° 52' 20" West a distance of 208.71 feet to the point of beginning.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Although Twin Falls County has been designated in the central zone, other sites in this project are in the west zone, so the west zone is used here also. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999822.

The tract of land to which this description applies contains 1.000 acres, more or less.



**SITE BK**  
S.W. 1/4, SEC. 7, TWP. 8 S., RNG. 13 E.,  
BOISE MERIDIAN, TWIN FALLS COUNTY, IDAHO  
JUNE 30, 1998



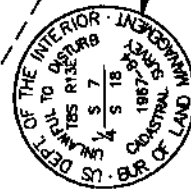
**LEGEND**

SEC. SECTION  
TWP. TOWNSHIP  
RNG. RANGE  
FD FOUND  
IP IRON PIPE

**NOTES**

1. COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
2. DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999822.

FD 2" IP W/3"  
BRASS CAP  
N 391903.00  
E 2834559.91



FD 2" IP W/3"  
BRASS CAP  
N 391910.48  
E 2831877.29

N89°50'25"W  
2683.10'

7 8  
18 17

**deen**

DAVID EVANS  
AND ASSOCIATES, INC.

415 - 118TH AVENUE S.E.  
BELLEVUE, WA. 98005-3518 (425) 519-6500

Enhanced Training in Idaho  
Mountain Home Air Force Base, Idaho

**Road BK**

A strip of land 60 feet wide, being 30 feet on each side of the following described centerline lying in Government Lots 3 and 4 of Section 7 and Government Lot 1, of Section 18, Township 8 South, Range 13 East, Boise Meridian, Twin Falls County, Idaho.

Commencing at the northwest corner of Section 18; thence south  $89^{\circ}46'57''$  east along the north line of said Section 18, 481.46 feet; thence south  $10^{\circ}04'24''$  east, 877.50 feet to the TRUE POINT OF BEGINNING on the centerline of the County Road; thence north  $10^{\circ}04'24''$  west, 788.87 feet to the beginning of a curve, tangent, concave southeasterly and having a radius of 386.77 feet; thence northerly and northeasterly 329.16 feet along said curve through a central angle of  $48^{\circ}45'42''$ ; thence north  $38^{\circ}41'18''$  east, 444.99 feet; thence north  $19^{\circ}46'11''$  east, 597.61 feet to the beginning of a curve, tangent, concave southwesterly and having a radius of 95.49 feet; thence northwesterly 150.19 feet along said curve through a central angle of  $90^{\circ}06'52''$ ; thence north  $70^{\circ}20'41''$  west, 347 feet more or less to the TERMINUS at a point on the southeasterly line of emitter Site BK in the Enhanced Training in Idaho Project, said point lying 63 feet more or less from the most easterly corner of said Site BK.

EXCEPTING THEREFROM the existing county road right-of-way .

Bearings are referred to the south line of the southwest quarter of Section 7 of said Township 8 South, Range 13 East.

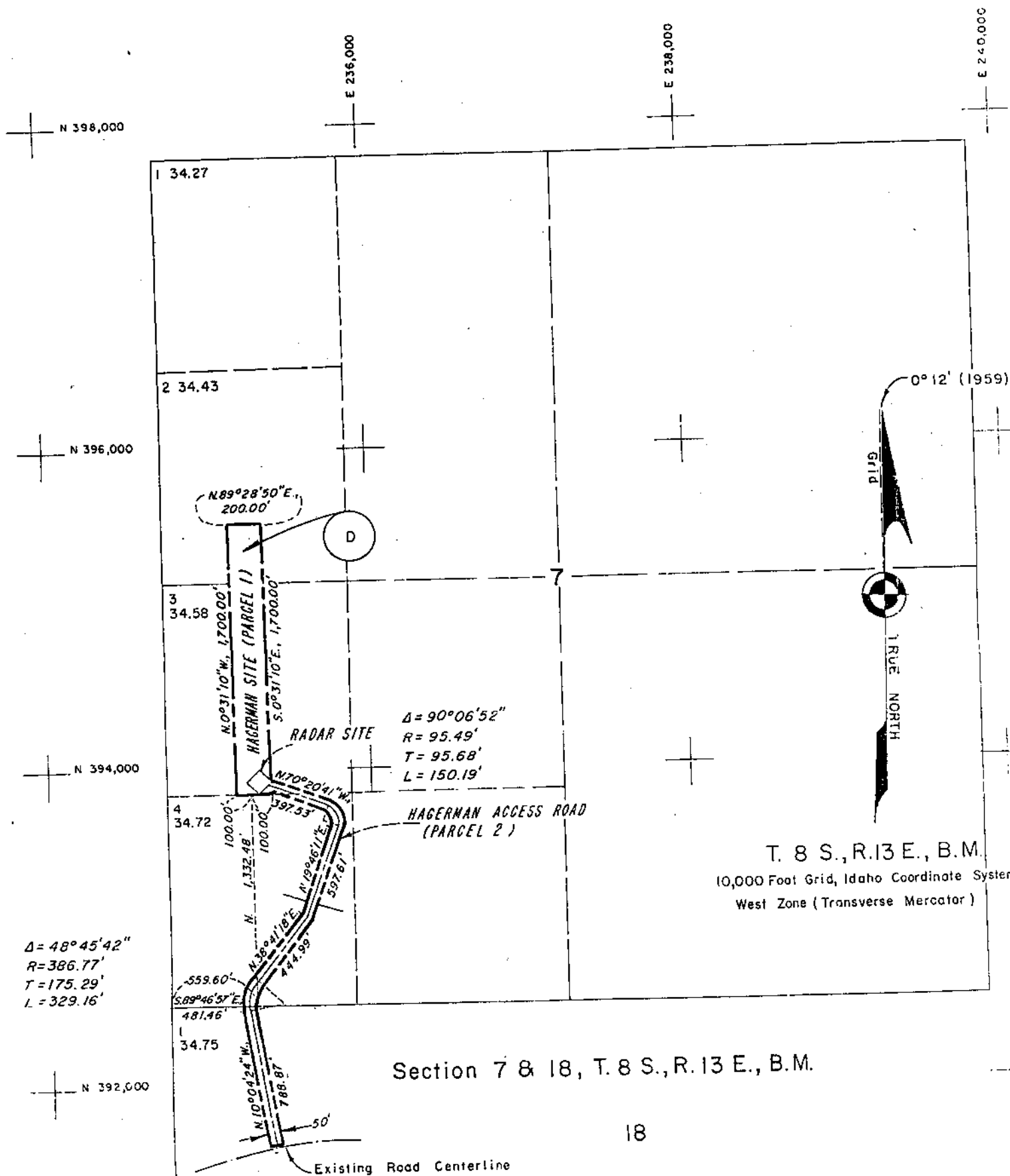
The tract of land to which this description applies contains 3.661 acres, more or less.

Preamble to the description revised by WHK 15 Jan 99

*Reference:*

WHITE SANDS MISSILE RANGE, N.M. Tract A - Parcel 3 (Hagerman Access Road)  
Pershing II Idaho Long Range Missile Launch Site  
Hagerman Site, Radar Site and Hagerman Access Road  
WANG: 2141D Written 5 Oct 81, Rev. 6 Jan 86





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Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 6-30-98  
DEA Job No. COEX0302

**LEGAL DESCRIPTION  
ND1**

**Site ND1**

All of Section 21, Township 9 South, Range 6 East of the Boise Meridian, Owyhee County, Idaho.

The tract of land to which this description applies contains 639 acres, more or less.

**Road ND1**

A 100-foot wide strip of land lying in the southeast, southwest, and northwest one-quarters of Section 20, the northeast one-quarters of Section 19, and the southeast one-quarter of Section 18, Township 9 South, Range 6 East of the Boise Meridian, Owyhee County, Idaho, being 50.00 feet on each side of the following described centerline.

Beginning at a point that bears North  $41^{\circ} 05' 27''$  East a distance of 154.82 feet from the southwest corner of Section 21, Township 9 South, Range 6 East, Boise Meridian; thence generally along an existing road along the arc of a 160.00 foot radius curve to the right, through a central angle of  $68^{\circ} 08' 50''$ , an arc distance of 190.30 feet (the long chord bears South  $73^{\circ} 38' 28''$  West a distance of 179.28 feet) to a point of tangency; thence North  $72^{\circ} 17' 07''$  West a distance of 155.31 feet; thence North  $63^{\circ} 20' 45''$  West a distance of 3,227.25 feet; thence along the arc of a 375.00 foot radius curve to the right, through a central angle of  $39^{\circ} 42' 38''$ , an arc distance of 259.91 feet (the long chord bears North  $43^{\circ} 29' 25''$  West a distance of 254.73 feet) to a point of tangency; thence North  $23^{\circ} 38' 06''$  West a distance of 1,405.76 feet; thence North  $2^{\circ} 32' 06''$  East a distance of 228.46 feet; thence North  $32^{\circ} 32' 39''$  West a distance of 87.04 feet; thence North  $51^{\circ} 21' 44''$  West a distance of 158.60 feet; thence North  $34^{\circ} 40' 04''$  West a distance of 458.69 feet; thence North  $50^{\circ} 19' 46''$  West a distance of 3,762.81 feet; thence along the arc of a 630.00 foot radius curve to the right, through a central angle of  $61^{\circ} 22' 55''$ , an arc distance of 674.93 feet



## LEGAL DESCRIPTION- Continued

(the long chord bears North 19° 38' 18" West a distance of 643.11 feet) to a terminus point in an existing road, sometimes known as "CCC Road", said terminus point bears South 51° 43' 05" West a distance of 6,045.11 feet from the north quarter-section corner of Section 17, Township 9 South, Range 6 East, Boise Meridian.

EXCEPTING THEREFROM the portion lying within Section 21, Township 9 South, Range 6 East, Boise Meridian.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999763.

The tract of land to which this description applies contains 24.06 acres, more or less.

### CCC Road

A 100-foot wide strip of land lying in the northeast and southeast one-quarters of Section 18, Township 9 South, Range 6 East of the Boise Meridian, Owyhee County, Idaho, being 50.00 feet on each side of the following described centerline.

Beginning at a point that bears South 84° 15' 39" West a distance of 4,114.69 feet from the north quarter-section corner of Section 17, Township 9 South, Range 6 East, Boise Meridian; thence generally along an existing road sometimes known as "CCC Road" South 11° 03' 09" West a distance of 3,396.67 feet to a terminus point in said existing road, sometimes known as "CCC Road", said terminus point bears South 51° 43' 05" West a distance of 6,045.11 feet from the north quarter-section corner of Section 17, Township 9 South, Range 6 East, Boise Meridian.

The sidelines of said strip of land are to be extended or shortened to begin on the extended or shortened sidelines of Missile Base Road as described herein, and end on the extended or shortened sidelines of Road ND1 as described herein.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999763.



## LEGAL DESCRIPTION- Continued

The tract of land to which this description applies contains 7.80 acres, more or less.

### **Missile Base Road, Gravel Portion**

A 100-foot wide strip of land lying in the northeast and northwest one-quarters of Section 18, Township 9 South, Range 6 East, and the northeast and northwest one-quarters of Section 13, the southwest one-quarter of Section 12, the southeast, southwest, and northwest one-quarters of Section 11, the northeast one-quarter of Section 10, the southeast and southwest one-quarters of Section 3, and the southeast one-quarter of Section 4, Township 9 South, Range 5 East of the Boise Meridian, Owyhee County, Idaho, being 50.00 feet on each side of the following described centerline.

Beginning at a point that bears South 84° 15' 39" West a distance of 4,114.69 feet from the north quarter-section corner of Section 17, Township 9 South, Range 6 East, Boise Meridian; thence generally along an existing road sometimes known as Missile Base Road South 75° 54' 54" West a distance of 3,565.10 feet; thence along the arc of a 1,000.00 foot radius curve to the right, through a central angle of 31° 18' 45", an arc distance of 546.51 feet (the long chord bears North 88° 25' 43" West a distance of 539.73 feet) to a point of tangency; thence North 72° 46' 21" West a distance of 2,794.10 feet; thence North 59° 46' 49" West a distance of 9,709.27 feet; thence along the arc of a 950.00 foot radius curve to the right, through a central angle of 14° 49' 10", an arc distance of 245.71 feet (the long chord bears North 52° 22' 14" West a distance of 245.03 feet) to a point of tangency; thence North 44° 57' 39" West a distance of 1,120.57 feet; thence along the arc of a 400.00 foot radius curve to the right, through a central angle of 29° 04' 24", an arc distance of 202.97 feet (the long chord bears North 30° 25' 27" West a distance of 200.80 feet) to a point of tangency; thence North 15° 53' 15" West a distance of 281.60 feet; thence along the arc of a 600.00 foot radius curve to the left, through a central angle of 73° 42' 23", an arc distance of 771.85 feet (the long chord bears North 52° 44' 27" West a distance of 719.72 feet) to a point of tangency; thence North 89° 35' 38" West a distance of 3,826.92 feet; thence along the arc of a 275.00 foot radius curve to the right, through a central angle of 80° 08' 15", an arc distance of 384.63 feet (the long chord bears North 49° 31' 30" West a distance of 354.04 feet) to a point of tangency; thence North 9° 27' 23" West a distance of 210.27 feet to a terminus point in a paved portion of said existing road, sometimes known as Missile Base Road, said terminus point bears North 81° 40' 00" East a distance of 9,347.60 feet from the southwest corner of Section 5, Township 9 South, Range 5 East, Boise Meridian.



### LEGAL DESCRIPTION- Continued

The sidelines of said strip of land are to be extended or shortened to begin on the extended or shortened sidelines of "CCC Road" as described herein, and end on the southerly right-of-way line, if any, of said existing road, sometimes known as Missile Base Road.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999763.

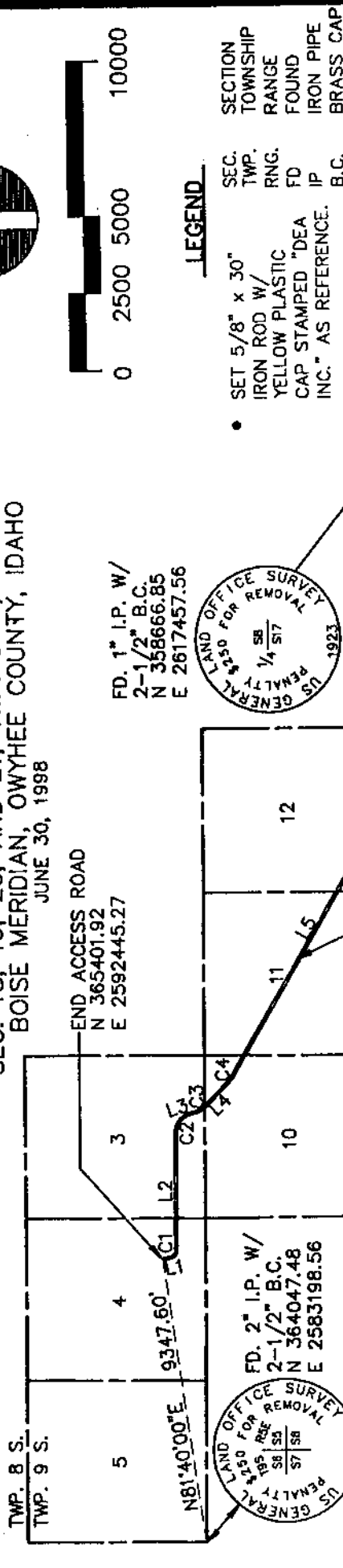
The tract of land to which this description applies contains 54.22 acres, more or less.





# ACCESS ROADS TO NO-DROP SITE 1

SEC. 3, 4, 10, 11, 12, AND 13, TWP. 9 S., RING. 5 E.  
SEC. 18, 19, 20, AND 21, TWP. 9 S., RING. 6 E.  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO  
JUNE 30, 1998



LINE TABLE

LINE	DIRECTION	DISTANCE
L1	N09°27'23"W	210.27
L2	N89°35'38"W	3826.92
L3	N15°53'15"W	281.60
L4	N44°57'39"W	1120.57
L5	N59°46'49"W	9709.27
L6	N72°46'21"W	2794.10
L7	S75°54'54"W	3565.10
L8	S11°03'09"W	3396.67
L9	N50°19'46"W	3762.81
L10	N34°40'04"W	458.69
L11	N51°21'44"W	158.60
L12	N32°32'39"W	87.04
L13	N02°32'06"E	228.46
L14	N23°38'06"W	1405.76
L15	N63°20'45"W	3227.25
L16	N72°17'07"W	155.31
L17	N39°34'03"E	7314.01
L18	S84°15'39"W	4114.69
L19	S51°43'05"W	6045.11
L20	N41°05'27"E	154.82

CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA
C1	275.00'	384.63'	80°08'15"
C2	600.00'	771.85'	73°42'23"
C3	400.00'	202.97'	29°04'24"
C4	950.00'	245.71'	14°49'10"
C5	1000.00'	546.51'	31°18'45"
C6	630.00'	674.93'	61°22'55"
C7	375.00'	259.91'	39°42'38"
C8	160.00'	190.30'	68°08'50"

LEGEND

- SET 5/8" x 30" IRON ROD W/ YELLOW PLASTIC CAP STAMPED "DEA IP INC." AS REFERENCE.
- SEC. TWP. RING. FD FOUND IP B.C. BRASS CAP

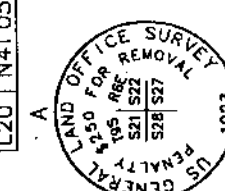
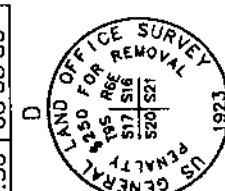
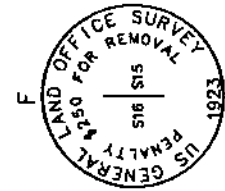
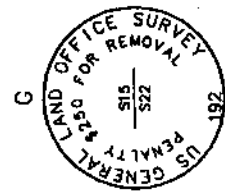
NOTES

- COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
- DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999763.



DAVID EVANS  
AND ASSOCIATES, INC.

415 - 118TH AVENUE S.E.  
BELLEVUE, WA 98005-3518 (425) 519-6500



FD 1" IP W/  
2-1/2" B.C.  
N 353379.78  
E 2627994.85

FD 1" IP W/  
2-1/2" B.C.  
N 356014.89  
E 2625351.28

FD 1" IP W/  
2-1/2" B.C.  
N 353378.60  
E 2622718.39

FD 2" IP W/  
2-1/2" B.C.  
N 353380.17  
E 2620085.03

FD 1" IP W/  
2-1/2" B.C.  
N 350743.11  
E 2620086.04

FD 1" IP W/  
2-1/2" B.C.  
N 348104.67  
E 2620087.10

FD 2" IP W/  
2-1/2" B.C.  
N 348098.84  
E 2625363.59



DAVID EVANS AND ASSOCIATES, INC.

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Bellevue, Washington 98005

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Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 9-18-98  
DEA Job No. COEX0302

LEGAL DESCRIPTION  
ND4

Site ND4

A tract of land lying in the northwest and southwest one-quarters of Section 14, Township 12 South, Range 4 East of the Boise Meridian, Owyhee County, Idaho, more particularly described as follows:

Beginning at a point that bears South 70° 03' 40" East a distance of 334.46 feet from the west quarter-section corner of Section 14, Township 12 South, Range 4 East, Boise Meridian; thence North 4° 32' 55" East a distance of 466.69 feet; thence South 85° 27' 05" East a distance of 466.69 feet; thence South 4° 32' 55" West a distance of 466.69 feet; thence North 85° 27' 05" West a distance of 466.69 feet to the point of beginning.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999685.

The tract of land to which this description applies contains 5.000 acres, more or less.



**LEGAL DESCRIPTION- Continued  
ND4**

**Road ND4, New**

A 100-foot wide strip of land lying in the northwest one-quarter of Section 14, Township 12 South, Range 4 East of the Boise Meridian, Owyhee County, Idaho, being 50.00 feet on each side of the following described centerline.

Commencing at a point that bears South 70° 03' 40" East a distance of 334.46 feet from the west quarter-section corner of Section 14, Township 12 South, Range 4 East, Boise Meridian, said point of commencement being the southwesterly corner of Site ND4; thence tracing the westerly line of Site ND4 North 4° 32' 55" East a distance of 466.69 feet to the northwesterly corner thereof; thence tracing the northerly line of Site ND4 South 85° 27' 05" East a distance of 416.60 feet to the true point of beginning of this centerline description; thence North 1° 08' 35" East a distance of 182.99 feet to the center of Site AV; thence North 7° 38' 23" West a distance of 292.89 feet to a terminus point in an existing road, said terminus point bears North 42° 44' 44" East a distance of 1,077.62 feet from said west quarter-section corner of Section 14.

The sidelines of said strip of land are to be extended or shortened to begin on the northerly line of Site ND4.

EXCEPTING THEREFROM Site AV, being a 60-foot-radius circular tract centered on the end of the first course from the true point of beginning, as noted in the above centerline description, and the right-of-way, if any, of said existing road.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999685.

The tract of land to which this description applies contains 0.85 acres, more or less.





## LEGAL DESCRIPTION- Continued ND4

### Road ND4, Improvement

A 100-foot wide strip of land lying in the northwest, northeast, and southeast one-quarters of Section 14, and the southwest and southeast one-quarters of Section 13, Township 12 South, Range 4 East, and the southwest and southeast one-quarters of Section 18, the northwest one-quarter of Section 19, and the southwest and southeast one-quarters of Section 17, Township 12 South, Range 5 East of the Boise Meridian, Owyhee County, Idaho, being 50.00 feet on each side of the following described centerline.

Beginning at a point that bears North 42° 44' 44" East a distance of 1,077.62 feet from the west quarter-section corner of Section 14, Township 12 South, Range 4 East, Boise Meridian; being a point in an existing road and the terminus point of Road ND4, New as described above; thence generally along the existing road North 80° 18' 26" East a distance of 684.90 feet; thence North 89° 36' 11" East a distance of 464.04; thence South 74° 32' 46" East a distance of 519.24 feet; thence South 68° 29' 55" East a distance of 9,346.22 feet; thence South 89° 20' 56" East a distance of 1,401.11 feet; thence North 76° 50' 33" East a distance of 1,048.03 feet; thence North 67° 42' 08" East a distance of 1,132.52 feet; thence South 87° 40' 43" East a distance of 437.10 feet; thence North 80° 33' 10" East a distance of 1,225.32 feet; thence North 72° 24' 30" East a distance of 409.33 feet; thence North 77° 01' 22" East a distance of 686.16 feet; thence North 59° 15' 33" East a distance of 1,080.73 feet; thence North 67° 34' 05" East a distance of 373.76 feet; thence along the arc of a 3000.00 foot radius curve to the right, through a central angle of 25° 51' 30", an arc distance of 1353.94 feet (the long chord of which bears North 80° 29' 50" East, a distance of 1,342.78 feet) to a point of tangency; thence South 86° 34' 25" East a distance of 357.16 feet; thence North 71° 09' 58" East a distance of 467.07 feet; thence North 78° 03' 05" East a distance of 455.74 feet to a terminus point in Idaho State Highway 51, said terminus point bears North 49° 05' 48" East a distance of 3,484.78 feet from the south quarter-section corner of Section 17, Township 12 South, Range 5 East, Boise Meridian.

The sidelines of said strip of land are to be extended or shortened to begin on the extended or shortened lines of Road ND4, New as described herein and end on the westerly right-of-way line of Idaho State Highway 51.



**LEGAL DESCRIPTION- Continued  
ND4**

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999685.

The tract of land to which this description applies contains 48.80 acres, more or less.



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# **SITE AV AND NO-DROP SITE 4**

N.W. 1/4 AND S.W. 1/4, SEC. 14, TWP. 12 S., RNG. 4 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO

SEPTEMBER 18, 1998

**DAVID EVANS  
AND ASSOCIATES, INC.**  
415 - 118TH AVENUE S.E.  
BELLEVUE, WA. 98005-3518 (425) 519-8500



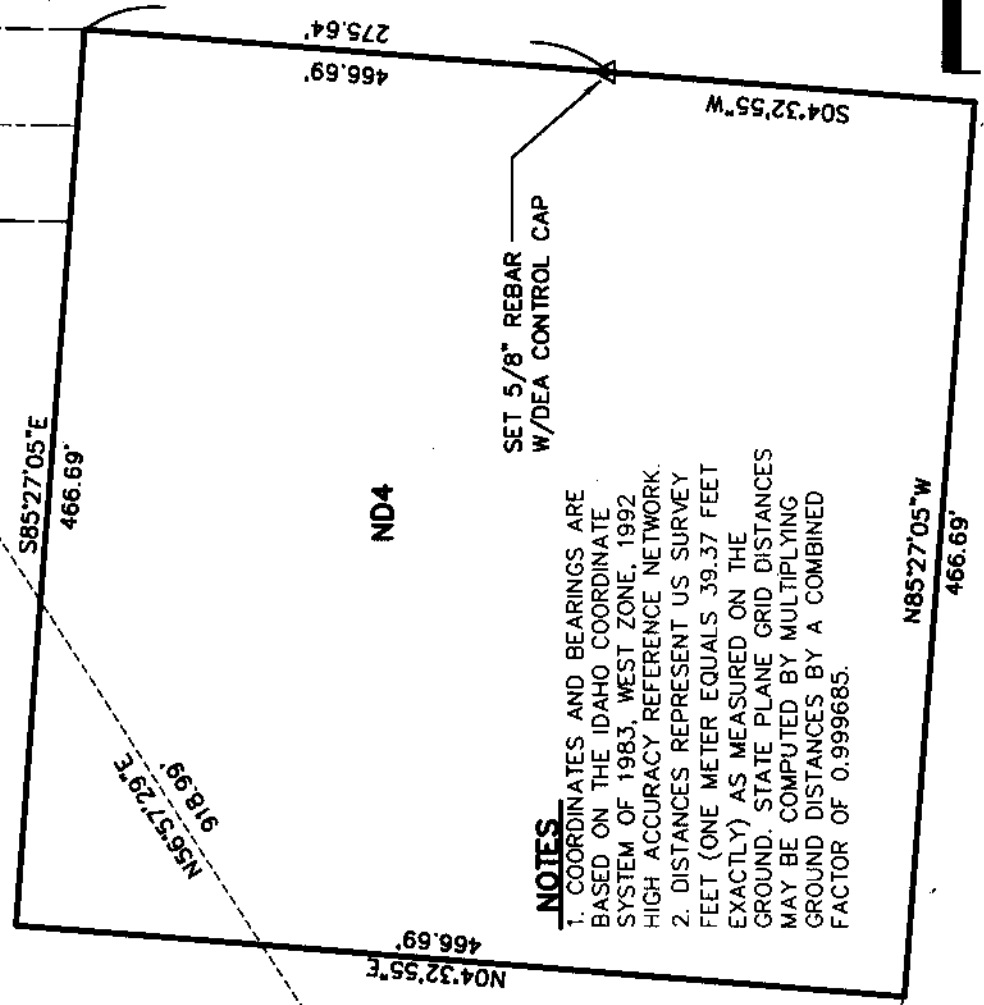
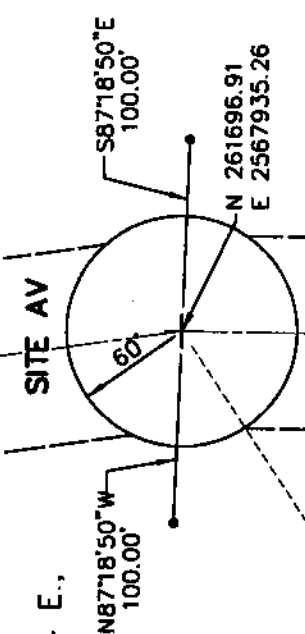
FD 18"x10"x8" TALL BASALT STONE  
W/4 NOTCHES ON S. FACE AND 2  
NOTCHES ON E. FACE W/3"x4"x0.5"  
TALL STONE MOUND 3' WEST  
N 263838.62  
E 2567166.97

## **LEGEND**

- SET 5/8" x 30"  
IRON ROD W/  
YELLOW PLASTIC  
CAP STAMPED "DEA  
INC." AS  
REFERENCE.

SEC.  
TWP.  
RNG.  
FD  
DIA.

SECTION  
TOWNSHIP  
RANGE  
FOUND  
DIAMETER



## **NOTES**

1. COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
2. DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999685.

FD 14"x9"x6" TALL BASALT STONE  
W/FAINT "1/4" ON W. FACE W/  
3' DIA.X0.4' TALL STONE MOUND  
2' WEST  
N 261195.99  
E 2567165.14

S 70°03'40"E  
334.46

2643.47

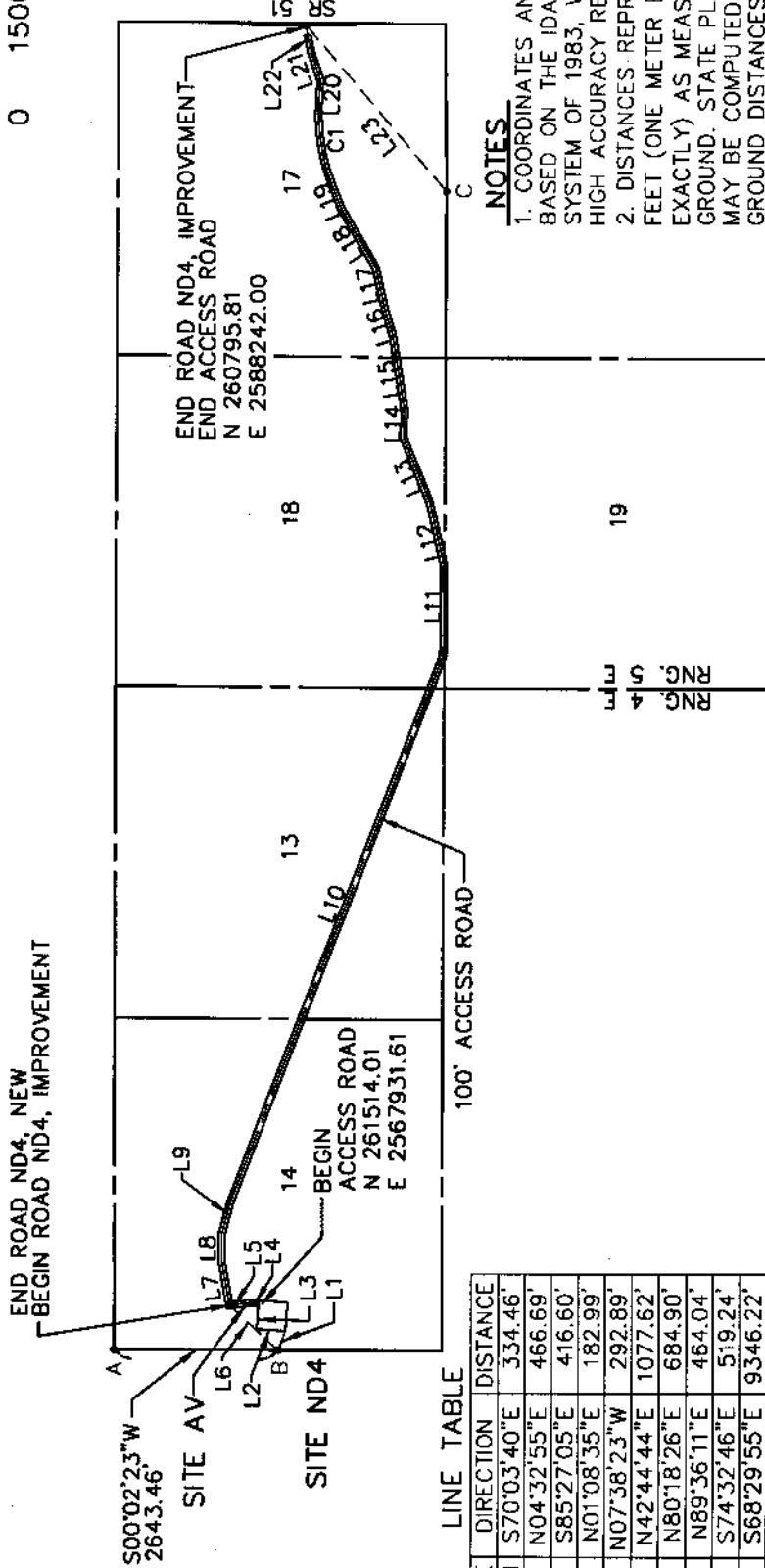
S 00°02'23"W

15011

10 11  
15 14

# ACCESS ROAD TO SITE AV AND NO-DROP SITE 4

PORTION OF SEC. 13 AND 14 TWP. 12 S., RNC. 4 E.,  
TOGETHER WITH PORTION OF SEC. 17, 18, AND 19 TWP. 12 S., RNC. 5 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO  
SEPTEMBER 18, 1998



LINE TABLE

LINE	DIRECTION	DISTANCE
L1	S70°03'40"E	334.46'
L2	N04°32'55"E	466.69'
L3	S85°27'05"E	416.60'
L4	N01°08'35"E	182.99'
L5	N07°38'23"W	292.89'
L6	N42°44'44"E	1077.62'
L7	N80°18'26"E	684.90'
L8	N89°36'11"E	464.04'
L9	S74°32'46"E	519.24'
L10	S68°29'55"E	9346.22'
L11	S89°20'56"E	1401.11'
L12	N76°50'33"E	1048.03'
L13	N67°42'08"E	1132.52'
L14	S87°40'43"E	437.10'
L15	N80°33'10"E	1225.32'
L16	N72°24'30"E	409.33'
L17	N77°01'22"E	686.16'
L18	N59°16'33"E	1080.73'
L19	N67°34'05"W	373.76'
L20	S86°34'25"E	357.16'
L21	N71°09'58"E	467.07'
L22	N78°03'05"E	455.74'
L23	N49°05'48"E	3484.78'

CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA
C1	3000.00'	1353.94'	25°51'30"

A = FD 18"x10"x8" TALL BASALT STONE  
W/4 NOTCHES ON S. FACE AND 2  
NOTCHES ON E. FACE W/3'X4'X0.5'  
TALL STONE MOUND 3' WEST  
N 263838.62  
E 2567166.97

B = FD 14"x9"x6" TALL BASALT STONE  
W/FAINT "1/4" ON W. FACE W/  
3' DIA.X0.4' TALL STONE MOUND  
2' WEST  
N 261195.99  
E 2567165.14

C = FD 16"x9"x4" TALL BASALT STONE  
W/"1/4" ON N. FACE W/3' DIA.X1'  
TALL STONE MOUND 2' NORTH  
N 258514.75  
E 2585608.97

## LEGEND

M/L MORE OR LESS  
SEC. SECTION  
TWP. TOWNSHIP  
RNG. RANGE  
FD FOUND

## NOTES

- COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
- DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999685.

deen

DAVID EVANS  
AND ASSOCIATES, INC.

415 - 118TH AVENUE S.E.  
BELLEVUE, WA. 98005-3518 (425) 519-6500

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Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 7-8-98  
DEA Job No. COEX0302

**LEGAL DESCRIPTION**  
**ND5**

**Site ND5**

A tract of land lying in the southwest one-quarter of Section 23, Township 11 South, Range 4 East of the Boise Meridian, Owyhee County, Idaho, more particularly described as follows:

Beginning at a point that bears South 41° 15' 52" East a distance of 2,878.29 feet from the west quarter-section corner of Section 23, Township 11 South, Range 4 East, Boise Meridian; thence North 81° 22' 56" East a distance of 466.69 feet; thence South 8° 37' 04" East a distance of 466.69 feet; thence South 81° 22' 56" West a distance of 466.69 feet; thence North 8° 37' 04" West a distance of 466.69 feet to the point of beginning.

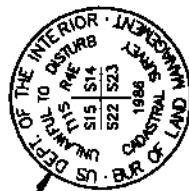
Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999697.

The tract of land to which this description applies contains 5.000 acres, more or less.



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**NO-DROP SITE 5**  
S.W. 1/4, SEC. 23, TWP. 11 S., RNG. 4 E.,  
BOISE MERIDIAN, OWYHEE COUNTY, IDAHO  
JULY 8, 1998



FD 2-1/2" ALUM. PIPE  
W/3" ALUM. CAP  
N 290217.32  
E 2567271.11



FD 2-1/2" ALUM. PIPE  
W/3" ALUM. CAP  
N 287574.20  
E 2567261.07

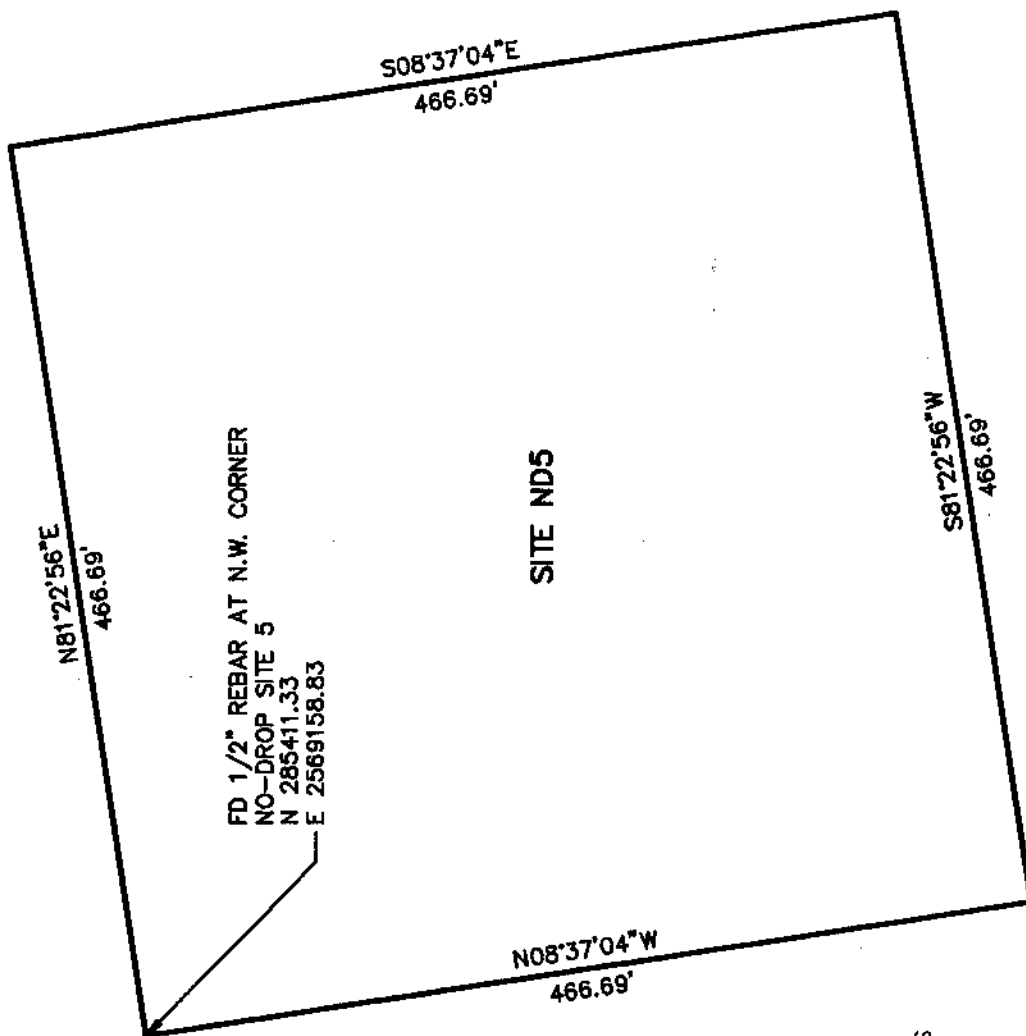
**NOTES**

1. COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
2. DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999697.



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BELLEVUE, WA. 98005-3518 (425) 619-6500

**LEGEND**  
ALUM. ALUMINUM  
M/L MORE OR LESS  
SEC. SECTION  
TWP. TOWNSHIP  
RNG. RANGE  
FD FOUND





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Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 9-18-98  
DEA Job No. COEX0302

## LEGAL DESCRIPTION ND7

### Site ND7

A tract of land lying in the southwest one-quarter of Section 19, Township 12 South, Range 9 East of the Boise Meridian, Owyhee County, Idaho, more particularly described as follows

Beginning at a point that bears South 39° 52' 38" East a distance of 899.77 feet from the west quarter-section corner of Section 19, Township 12 South, Range 9 East, Boise Meridian; thence North 76° 48' 15" East a distance of 466.69 feet; thence South 13° 11' 45" East a distance of 466.69 feet; thence South 76° 48' 15" West a distance of 466.69 feet; thence North 13° 11' 45" West a distance of 466.69 feet to the point of beginning.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999714.

The tract of land to which this description applies contains 5.000 acres, more or less.



**LEGAL DESCRIPTION- Continued  
ND7**

**Road ND7, New**

A 100-foot wide strip of land lying in the southwest and northwest one-quarters of Section 19, Township 12 South, Range 9 East of the Boise Meridian, Owyhee County, Idaho, being 50.00 feet on each side of the following described centerline.

Commencing at a point which bears South 39° 52' 38" East a distance of 899.77 feet from the west quarter-section corner of Section 19, Township 12 South, Range 9 East, Boise Meridian, said point of commencement being the northwesterly corner of Site ND7; thence tracing the westerly line of Site ND7 South 13° 11' 45" East a distance of 50.00 feet to the true point of beginning of this centerline description; thence South 76° 48' 15" West a distance of 50.00 feet; thence North 19° 13' 22" West a distance of 1039 feet, more or less, to the center of an existing road.

The sidelines of said strip of land are to be extended or shortened to begin on said westerly line of Site ND7 and end on the easterly right-of-way line, if any, of said existing road.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999714.

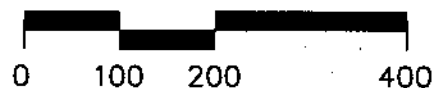
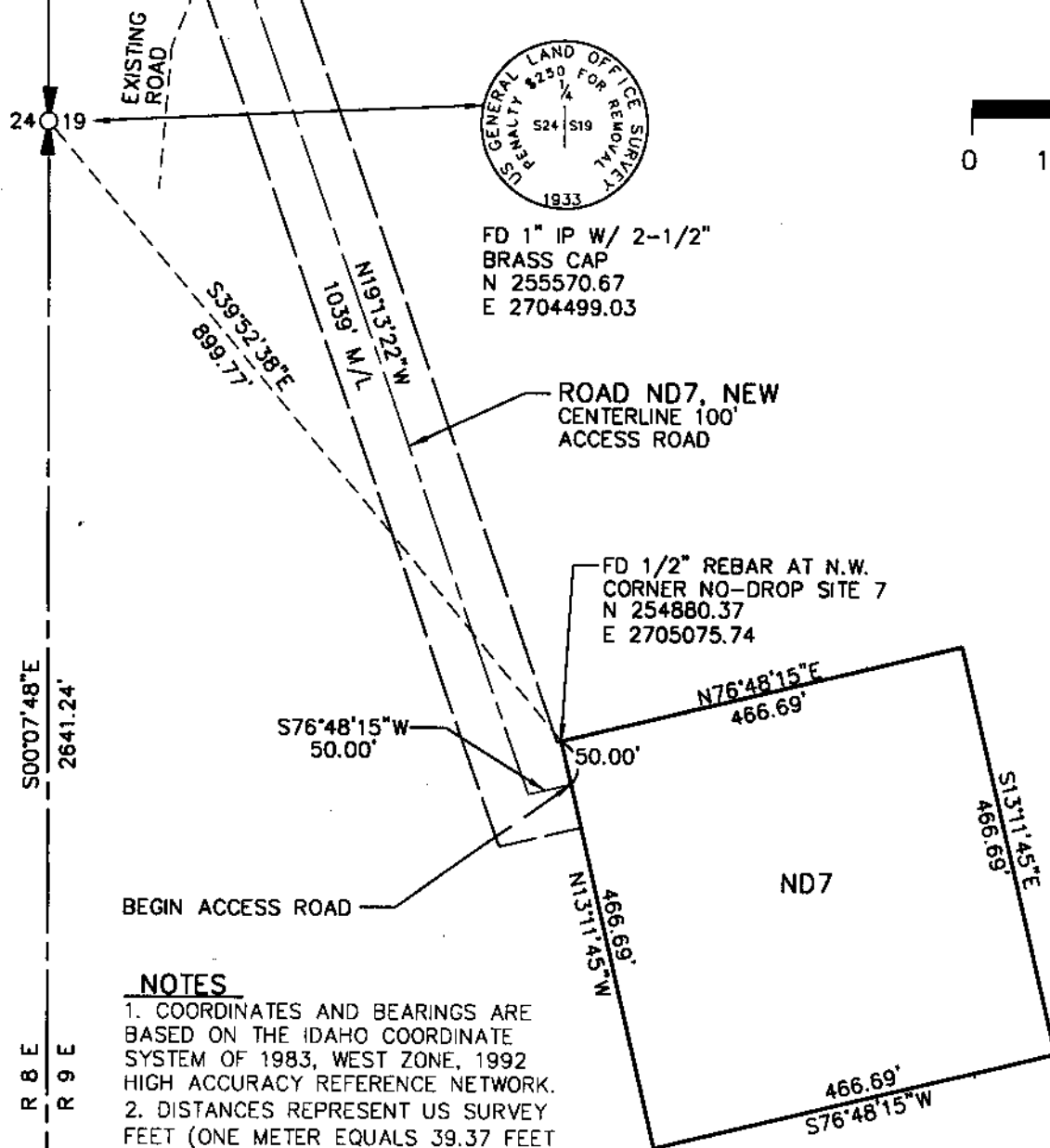
The tract of land to which this description applies contains 2.50 acres, more or less.



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**NO-DROP SITE 7**  
 E. 1/2, SEC. 19, TWP. 12 S., RNG. 9 E.,  
 BOISE MERIDIAN, OWYHEE COUNTY, IDAHO  
 SEPTEMBER 18, 1998



- NOTES**
- COORDINATES AND BEARINGS ARE BASED ON THE IDAHO COORDINATE SYSTEM OF 1983, WEST ZONE, 1992 HIGH ACCURACY REFERENCE NETWORK.
  - DISTANCES REPRESENT US SURVEY FEET (ONE METER EQUALS 39.37 FEET EXACTLY) AS MEASURED ON THE GROUND. STATE PLANE GRID DISTANCES MAY BE COMPUTED BY MULTIPLYING GROUND DISTANCES BY A COMBINED FACTOR OF 0.999714.

**LEGEND**

M/L MORE OR LESS  
 SEC. SECTION  
 TWP. TOWNSHIP  
 RNG. RANGE  
 FD FOUND  
 IP IRON PIPE

FD 2" IP W/ 2-1/2"  
 BRASS CAP  
 N 252930.21  
 E 2704505.02



**DAVID EVANS  
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 415 - 118TH AVENUE S.E.  
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Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 8-18-98  
DEA Job No. COEX0302

**LEGAL DESCRIPTION  
ND 7 / AF ROADS**

**Road AF Improvement-State Ownership**

A 60-foot wide strip of land lying in the northeast one-quarter of Section 36, Township 12 South, Range 8 East of the Boise Meridian, Owyhee County, Idaho, being 30.00 feet on each side of the following described centerline.

Beginning at a point in an existing road, said point bears North 4° 44' 35" West a distance of 74.90 feet from the northeast corner of Section 36, Township 12 South, Range 8 East of the Boise Meridian, thence generally along an existing road South 8° 48' 16" East a distance of 273.77 feet.

EXCEPTING THEREFROM the portion of said 60-foot wide strip lying outside Section 36, Township 12 South, Range 8 East, Boise Meridian.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999720.

The tract of land to which this description applies contains 0.05 acres, more or less.

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Enhanced Training in Idaho (ETI), Phase I  
Mountain Home Air Force Base, Idaho  
KRW, DEA Inc., 8-18-98  
DEA Job No. COEX0302

**LEGAL DESCRIPTION  
ND 7 / AF ROADS**

**Clover Butte Road**

A 100-foot wide strip of land lying in the southeast and southwest one-quarters of Section 27, the southeast one-quarter of Section 28, the northeast and northwest one-quarters of Section 33, the northeast, southeast, and southwest one-quarters of Section 32, and the southeast one-quarter of Section 31, Township 11 South, Range 9 East and the northeast, northwest, and southwest one-quarters of Section 6, Township 12 South, Range 9 East of the Boise Meridian, Owyhee County, Idaho, being 50.00 feet on each side of the following described centerline.

Beginning at a point in an existing road sometimes known as Clover Three Creek Road, said point bears North 61° 38' 51" East a distance of 4,373.22 feet from the southwest corner of Section 27, Township 11 South, Range 9 East, Boise Meridian, thence generally along an existing road sometimes known as Clover Butte Road South 89° 46' 07" West a distance of 226.86 feet; thence South 70° 35' 14" West a distance of 1,048.45 feet; thence South 66° 54' 59" West a distance of 252.25 feet; thence South 75° 16' 22" West a distance of 1,166.75 feet; thence South 63° 41' 40" West a distance of 454.58 feet; thence South 70° 23' 52" West a distance of 471.66 feet; thence South 58° 33' 46" West a distance of 276.04 feet; thence South 74° 35' 42" West a distance of 1,035.99 feet; thence South 63° 52' 19" West a distance of 899.95 feet; thence South 54° 34' 43" West a distance of 507.64 feet; thence South 62° 10' 55" West a distance of 691.65 feet; thence South 67° 53' 50" West a distance of 245.35 feet; thence South 63° 38' 53" West a distance of 642.60 feet; thence South 67° 44' 17" West a distance of 2,137.15 feet; thence South 66° 08' 05" West a distance of 1,145.25 feet; thence South 74° 07' 19" West a distance of 380.57 feet; thence South 62° 08' 51" West a distance of 2,152.43 feet; thence South 51° 19' 57" West a distance of 418.03 feet; thence South 65° 55' 31" West a distance of 717.88 feet; thence South 60° 38' 03" West a distance of 1,538.65 feet; thence South 64° 46' 14" West a distance of 771.80 feet; thence South 53° 57' 43" West a distance of



**LEGAL DESCRIPTION – Continued**  
**ND 7 / AF ROADS**

506.86 feet; thence South 59° 47' 55" West a distance of 1,181.91 feet; thence South 34° 57' 05" West a distance of 801.35 feet; thence South 42° 47' 32" West a distance of 389.83 feet; thence South 61° 36' 02" West a distance of 458.45 feet; thence South 47° 01' 02" West a distance of 521.14 feet; thence South 29° 27' 11" West a distance of 818.49 feet; thence South 15° 53' 16" West a distance of 904.58 feet; thence South 14° 14' 36" West a distance of 698.22 feet; thence South 4° 49' 39" West a distance of 297.83 feet; thence South 21° 41' 54" West a distance of 287.26 feet; thence South 3° 38' 49" West a distance of 34.66 feet to a terminus point, said terminus point bears North 12° 03' 20" East a distance of 669.70 feet from the southwest corner of Section 6, Township 12 South, Range 9 East, Boise Meridian.

The sidelines of said strip of land are to be extended or shortened to begin on the westerly right-of-way line, if any, of said existing road sometimes known as Clover Three Creek Road.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999720.

The tract of land to which this description applies contains 55.21 acres, more or less.



**LEGAL DESCRIPTION - Continued**  
**ND 7 / AF ROADS**

**Road ND7, Improvement**

A 100-foot wide strip of land lying in the southwest one-quarter of Section 6, the northwest and southwest one-quarter of Section 7, the northwest and southwest one-quarters of Section 18, and the northwest and southwest one-quarters of Section 19, Township 12 South, Range 9 East and the northeast one-quarter of Section 12, Township 12 South, Range 8 East of the Boise Meridian, Owyhee County, Idaho, being 50.00 feet on each side of the following described centerline.

Beginning at a point in an existing road sometimes known as Clover Butte Road, said point bears North 12° 03' 20" East a distance of 669.70 feet from the southwest corner of Section 6, Township 12 South, Range 9 East, Boise Meridian, thence generally along an existing road South 3° 38' 49" West a distance of 735.26 feet; thence South 13° 49' 03" West a distance of 556.63 feet; thence South 4° 28' 14" West a distance of 331.63 feet; thence South 18° 55' 00" East a distance of 205.51 feet; thence South 6° 37' 51" West a distance of 309.20 feet; thence South 8° 59' 01" East a distance of 380.14 feet; thence South 30° 09' 51" East a distance of 177.40 feet; thence South 10° 51' 01" East a distance of 559.99 feet; thence South 25° 56' 59" East a distance of 1,371.83 feet; thence South 52° 35' 27" East a distance of 577.56 feet; thence South 37° 39' 06" East a distance of 506.97 feet; thence South 17° 38' 25" West a distance of 393.79 feet; thence South 27° 56' 40" West a distance of 145.56 feet; thence South 21° 37' 49" West a distance of 371.98 feet; thence South 3° 21' 31" East a distance of 269.37 feet; thence South 5° 53' 15" West a distance of 492.56 feet; thence South 9° 32' 46" East a distance of 257.51 feet; thence South 7° 35' 56" West a distance of 1,461.71 feet; thence South 17° 05' 59" West a distance of 293.08 feet; thence South 2° 14' 05" West a distance of 1,066.31 feet; thence South 10° 56' 09" West a distance of 206.73 feet; thence South 5° 28' 03" West a distance of 735.11 feet; thence South 18° 31' 37" West a distance of 529.63 feet; thence South 2° 48' 33" East a distance of 206.20 feet; thence South 18° 53' 21" West a distance of 206.35 feet; thence South 10° 55' 52" West a distance of 317.14 feet; thence South 6° 48' 10" West a distance of 743.68 feet; thence South 0° 44' 20" West a distance of 284.49 feet; thence South 19° 50' 38" West a distance of 666.57 feet to a terminus point, said terminus point bears North 41° 36' 25" East a distance of 300.52 feet from the west quarter-section corner of Section 19, Township 12 South, Range 9 East, Boise Meridian.

The sidelines of said strip of land are to be extended or shortened to end on the extended or shortened sidelines of Road ND7, New, as described for this project.



**LEGAL DESCRIPTION - Continued**  
**ND 7 / AF ROADS**

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999720.

The tract of land to which this description applies contains 32.97 acres, more or less.

**Road AF Improvement, Federal Ownership**

A 60-foot wide strip of land lying in the southwest one-quarter of Section 19, the southwest one-quarter of Section 30, the northwest, southwest, and southeast one-quarters of Section 31, and the southwest and southeast one-quarters of Section 32, Township 12 South, Range 9 East; the southeast one-quarter of Section 24, and the northeast and southeast one-quarters of Section 25, Township 12 South, Range 8 East; and the northwest one-quarter of Section 5, Township 13 South, Range 9 East of the Boise Meridian, Owyhee County, Idaho, being 30.00 feet on each side of the following described centerline.

Beginning at a point in an existing road, said point bears North 41° 36' 25" East a distance of 300.52 feet from the west quarter-section corner of Section 19, Township 12 South, Range 9 East of the Boise Meridian, thence generally along an existing road South 19° 50' 38" West a distance of 197.01 feet; thence South 0° 42' 21" West a distance of 279.66 feet; thence South 12° 16' 30" West a distance of 633.64 feet; thence South 3° 56' 25" West a distance of 853.36 feet; thence South 4° 11' 39" East a distance of 151.28 feet; thence South 2° 23' 35" West a distance of 827.88 feet; thence South 8° 59' 53" West a distance of 444.68 feet; thence South 5° 25' 37" West a distance of 560.23 feet; thence South 4° 28' 25" East a distance of 446.22 feet; thence South 13° 59' 28" East a distance of 214.67 feet; thence South 10° 21' 48" West a distance of 261.50 feet; thence South 1° 02' 32" West a distance of 1,243.49 feet; thence South 4° 02' 25" East a distance of 1,466.23 feet; thence South 0° 40' 17" West a distance of 261.43 feet; thence South 20° 19' 57" East a distance of 303.87 feet to a point that bears North 4° 44' 35" West a distance of 74.90 feet from the northeast corner of Section 36, Township 12 South, Range 8 East of the Boise Meridian; thence South 8° 48' 16" East a distance of 273.77 feet; ~~thence South 10° 33' 05" East a distance of 616.15 feet; thence South 12° 01' 41" East a distance of 435.82 feet; thence South 27° 16' 16" East a distance of 476.88 feet; thence South 45° 27' 57" East a distance of 268.46 feet; thence South 27° 20' 00" East a distance of 557.88 feet; thence South 66° 50' 07" East a distance of 377.04 feet; thence South 74° 57' 03" East a distance of 508.57~~



**LEGAL DESCRIPTION - Continued**  
**ND 7 / AF ROADS**

~~feet, thence South 75° 50' 04" East a distance of 889.10 feet, thence South 55° 21' 10" East a distance of 889.10 feet, thence South 28° 18' 17" East a distance of 893.07 feet, thence South 54° 29' 52" East a distance of 840.07 feet, thence South 68° 20' 07" East a distance of 120.55 feet, thence South 64° 19' 38" East a distance of 550.04 feet, thence South 51° 35' 18" East a distance of 932.64 feet, thence North 87° 45' 06" East a distance of 507.70 feet, thence North 67° 04' 05" East a distance of 644.67 feet, thence North 60° 11' 48" East a distance of 214.00 feet, thence North 56° 14' 20" East a distance of 433.06 feet, thence South 60° 04' 02" East a distance of 478.68 feet, thence South 46° 21' 15" East a distance of 195.00 feet, thence South 80° 52' 28" East a distance of 304.33 feet, thence North 62° 04' 50" East a distance of 507.41 feet, thence North 71° 54' 58" East a distance of 354.15 feet, thence North 81° 34' 00" East a distance of 342.50 feet, thence North 67° 15' 35" East a distance of 233.71 feet, thence South 62° 09' 26" East a distance of 183.48 feet, thence South 60° 20' 00" East a distance of 317.95 feet, thence North 57° 10' 12" East a distance of 221.34 feet, thence North 70° 45' 00" East a distance of 207.45 feet, thence North 64° 03' 13" East a distance of 444.54 feet, thence North 64° 19' 01" East a distance of 85.05 feet to a terminus point in an existing road, said terminus point bears North 4° 51' 43" West a distance of 1,020.04 feet from the southeast corner of Section 02, Township 12 South, Range 0 East, Boise Meridian.~~

The sidelines of said strip of land are to be extended or shortened to begin on the southerly sideline of Road ND7, New and end on the extended or shortened sidelines of Road ~~AG, New~~, as AF Improvement described for this project.

EXCEPTING THEREFROM the portion of said 60-foot wide strip lying within Section 36, Township 12 South, Range 8 East, Boise Meridian.

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999720.

The tract of land to which this description applies contains ~~20.70~~ acres, more or less.

11.50



**LEGAL DESCRIPTION - Continued**  
**ND 7 / AF ROADS**

~~**Road AG, New**~~

~~A 60-foot wide strip of land lying in the southeast one-quarter of Section 32, Township 12 South, Range 9 East of the Boise Meridian, Owyhee County, Idaho, being 30.00 feet on each side of the following described centerline.~~

~~Beginning at a point in an existing road, said point bears North  $4^{\circ} 51' 43''$  West a distance of 1,020.94 feet from the southeast corner of Section 32, Township 12 South, Range 9 East of the Boise Meridian, thence South  $0^{\circ} 38' 42''$  East a distance of 238.94 feet to a terminus point that bears North  $6^{\circ} 08' 34''$  West a distance of 782.73 feet from the southeast corner of Section 32, Township 12 South, Range 9 East, Boise Meridian.~~

~~The sidelines of said strip of land are to be extended or shortened to begin on the extended or shortened sidelines of Road AG, Improved, as described for this project, and end on the northerly boundary of Site AG, being a 60-foot radius circular tract centered on the terminus point of the above centerline description.~~

Bearings of this description are based on the Idaho coordinate system of 1983, west zone, as determined by the 1992 High Accuracy Reference Network. Distances represent US Survey feet (one meter equals 39.37 inches exactly) as measured on the ground; state plane grid distances may be computed by multiplying ground distances by a combined factor of 0.999720.

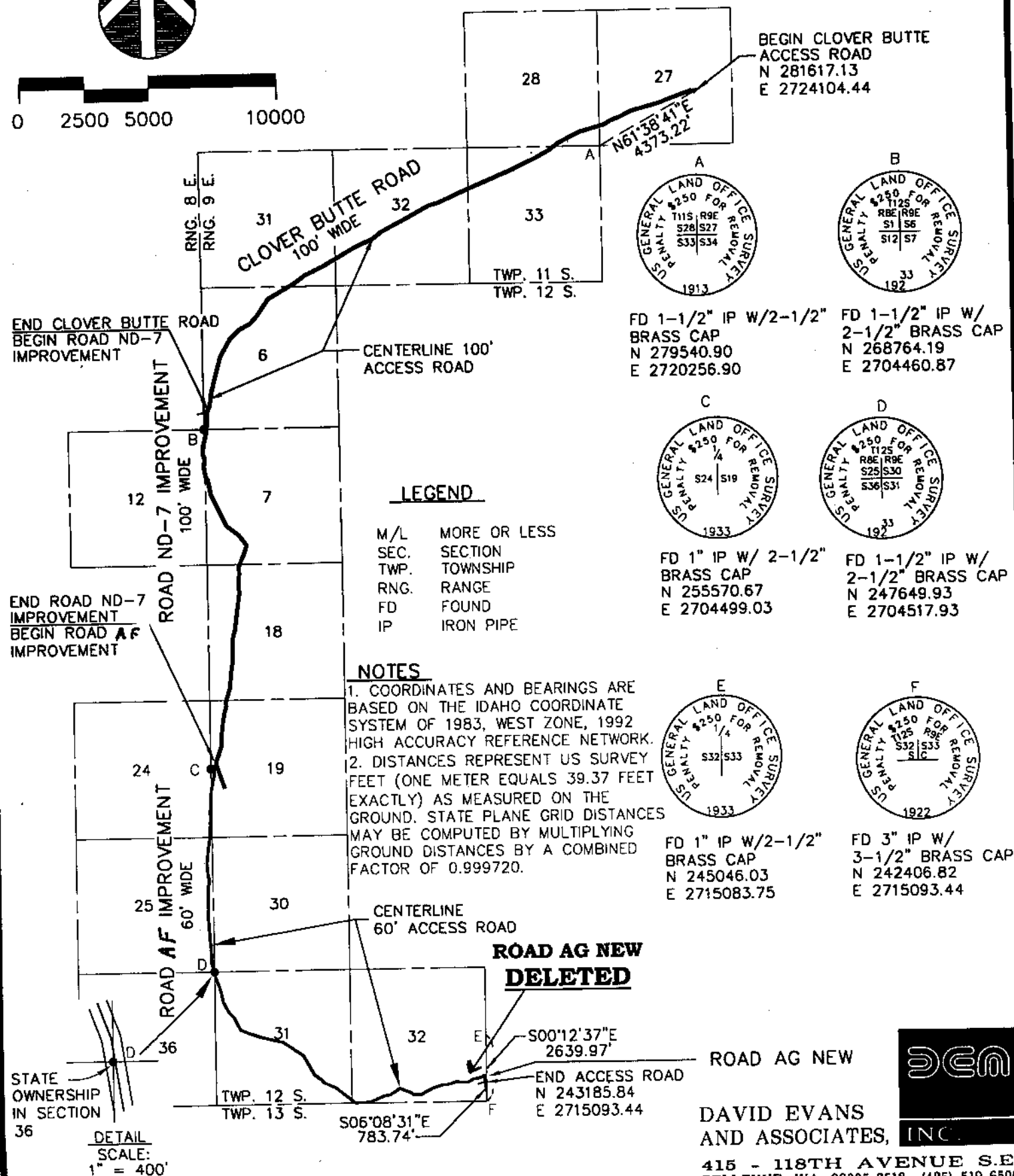
~~The tract of land to which this description applies contains 0.25 acres, more or less.~~



**ACCESS ROADS TO SITES ND 7 / AF**  
 SEC. 27, 28, 31, 32, AND 33, TWP. 11 S., RNG. 9 E.,  
 SEC. 12, 24, 25 AND 36, TWP. 12 S., RNG. 8 E.,  
 SEC. 6, 7, 18, 19, 30, 31, AND 32, TWP. 12 S., RNG. 9 E.,  
 BOISE MERIDIAN, OWYHEE COUNTY, IDAHO  
 AUGUST 18, 1998



0 2500 5000 10000



**DAVID EVANS  
AND ASSOCIATES, INC.**

415 - 118TH AVENUE S.E.  
 BELLEVUE, WA. 98005-3518 (425) 519-6500

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## APPENDIX E • GROUND RESISTANCE TESTING

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**ENHANCED TRAINING IN IDAHO  
GROUND RESISTANCE TESTING**

**SELECTED SITES  
MOUNTAIN HOME AIR FORCE BASE**

**MOUNTAIN HOME, IDAHO**

by

Bradley Engineering/Chartered  
382 Walnut  
Idaho Falls, ID 83402  
(208) 523-2862  
FAX: (208) 523-2864  
EMAIL: bec@srv.net

January 1999



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ENHANCED TRAINING IN IDAHO  
GROUND RESISTANCE TESTING - SELECTED SITES  
MOUNTAIN HOME AIR FORCE BASE  
MOUNTAIN HOME, IDAHO

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SITE BA .....	65
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SITE BC .....	73
SITE BD .....	77
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SITE BF . . . . .	85
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**ENHANCED TRAINING IN IDAHO  
GROUND RESISTANCE TESTING - SELECTED SITES  
MOUNTAIN HOME AIR FORCE BASE  
MOUNTAIN HOME, IDAHO**

**SUMMARY**

Ground resistance test were conducted on the following emitter sites for Enhanced Training in Idaho.

AA	BA
AB	BB
AC	BC
AD	BD
AE	BE
AF	BF
AG	BG
AH	BH
AI	BI
AJ	BJ
AK	BK
AM	
AQ	
AT	
AU	
AV	

Sites AD, AE, AN, AQ, and AP included in the ETI design package for Phase I. Site AQ was included in the design package for Phase II; however, the ground resistance tests had not been complete for site AQ.

The ground resistance testing was accomplished using an AMEC 4500 ground meggar to conduct soil resistivity testing. Soil resistivity testing was accomplished in accordance with the 4 point method of determining soil resistivity.

Data from the soil resistivity testing was used as input to a computer program available from Lyncole X<sup>2</sup> Grounding to design a ground system with a maximum resistance of 15 ohms.

The computer program provided calculations and recommended designs to meet the ground resistance requirements.

Appendix A is a drawing of the location of the sites.

Appendix B contains site by site data and recommended ground system configuration utilizing chemical ground systems to meet the 15 ohm maximum ground resistance.

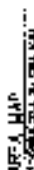
Appendix C contains costs for the chemical ground system only.

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# **APPENDIX A**

## **LOCATION OF SITES**

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10/20/2017 10:20:00 AM

LLGE:4D.

**44151**

**MECH-23**

1779 J.B.M. 402, 45

1/4 inch wire cut

**THE UNIVERSITY OF CHICAGO**

MD-UNIT-57

## **APPENDIX B**

### **SITE BY SITE DATA**

## SITE AA

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LYNCOLE XLT Grounding  
 3547 Wyndgate St., #104  
 Torrance, CA 90503  
 (310) 714-4333  
 FAX (310) 214-1114  
 (toll) 882-2410

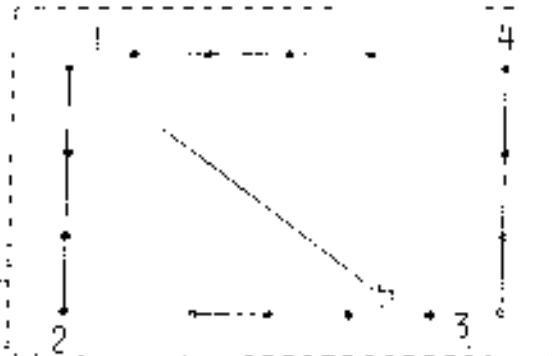
# Soil Resistivity Testing

## 4 Point Method

Building & Soil Resistivity Profile

4 soil testing probes  
 spaced equally in five  
 locations on site

property line →



Date 12-3-98

Conditions \_\_\_\_\_

### Readings

(SPACING)

Location	5'	10'	20'	30'	40'	Comments
1	23.9	14.3	5.4	3.8	2.7	
2	20.7	11.9	6.3	4.3	3.1	
3	16.1	11.4	5.2	4.2	3.5	
4	12.8	10.7	4.6	3.3	2.9	
5	20.7	14.2	7.2	4.6	3.4	

## GROUND TEST REPORT

SITE: Enhanced Training in Idaho; Site AA DATE: 12-3-98

Attach map of sites TIME: 2:45 P.M.

LATITUDE: \_\_\_\_\_ (if available)

LONGITUDE: \_\_\_\_\_ (if available)

### THOSE CONDUCTING TESTS:

\_\_\_\_\_ David Hammond

\_\_\_\_\_ John Wanstrom

OTHERS: \_\_\_\_\_

### TEST CONDITIONS - SOIL OBSERVATIONS - DESCRIBE:

Dry Damp/Snow

Rock \_\_\_\_\_

Other \_\_\_\_\_

### TEST LAYOUT:

Attach test site plan \_\_\_\_\_

Approximate compass reading \_\_\_\_\_

## SOIL RESISTIVITY TEST

### Test Evaluation:

If in range of 8000 ohms/cm to 12,000 ohms/cm, no further testing required.

If higher range test 3 and 4.

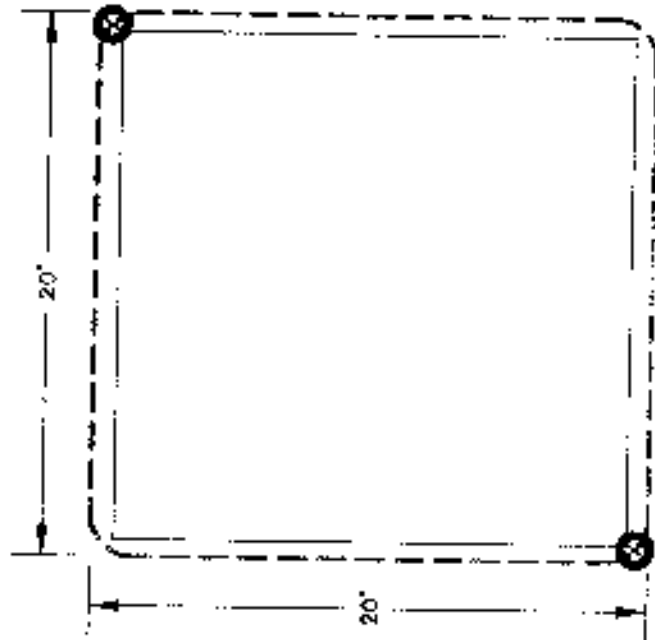
### Calculation:

P = 191.5 AR ohm/cm

P = Soil resistivity (ohm-cm)

A = Distance in feet

R = Resistance in ohms from scale



# NOTES:

- BARE 4/C ANG. COPPER CONDUCTOR BURIED 30" BELOW GRADE OR 6' BELOW FROST LINE
- ALL BENDS IN GROUND CONDUCTOR TO BE MADE WITH MIN. 12" RADIUS
- K2-10CS

**LYNCOLE**

TECHNICAL SERVICES  
3547 VOYAGER STREET, SUITE 304  
TORRANCE, CA. 90503  
(310) 952-2610

NOTES PROVIDED BY  
BRADLEY ENGINEERING CHTD.

CLIENT / END USER BRADLEY ENGINEERING CHTD./U.S. AIR FORCE	
FIGURE 1	PROJECT NAME EMITTER SITES (PHASE 2)
TITLE GROUNDING OPTION	
LOCATION CITY, STATE IDAHO	CALCULATED RESISTANCE ≤ 15 OHMS
DRAWN BY MRA	APPROVED BY DATE BJS 01/20/99
REFERENCE NUMBER AA	SCALE NONE
LTS NUMBER 89028	

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SITE AB

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# GROUND TEST REPORT

SITE: Enhanced Training in Idaho; Site AB DATE: 12-8-98

Attach map of sites TIME: 1:03

LATITUDE: 42.60768 \_\_\_\_\_ (if available)

LONGITUDE: -113:60.868 .. (if available)

**THOSE CONDUCTING TESTS:**

.. \_\_\_\_\_ David Hammond ..

... .. John Wangstrom

OTHERS:

TEST CONDITIONS - SOIL OBSERVATIONS - DESCRIBE:

Dry 3" Snow and increasing .. .. .

Rock \_\_\_\_\_

Other .. .. .

**TEST LAYOUT:**

Attach test site plan \_\_\_\_\_

Approximate compass reading ... ..

### SOIL RESISTIVITY TEST

Test Evaluation:

If in range of 8000 ohms/cm to 12,000 ohms/cm, no further testing required.

If higher range - test 3 and 4.

Calculation:

P- 191.5 AR number

$P$  - Soil resistivity (ohm-cm)

A = Distance in feet

$R$  = Resistance in ohms from scale



LYNCEE XIT GROUTING  
 3517 Meyer St., #101  
 Florence, SC 29501  
 (810) 214-4000  
 FAX (810) 214-1114  
 (800) 962-3030

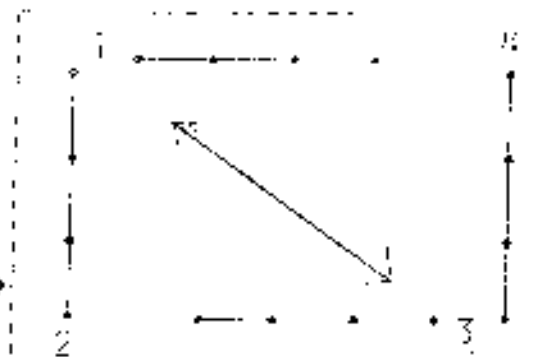
# Soil Resistivity Testing

## 4 Point Method

Building & Soil Resistivity Profile

4 soil testing probes spaced equally in five locations on site

property line →



Date 12-8-98

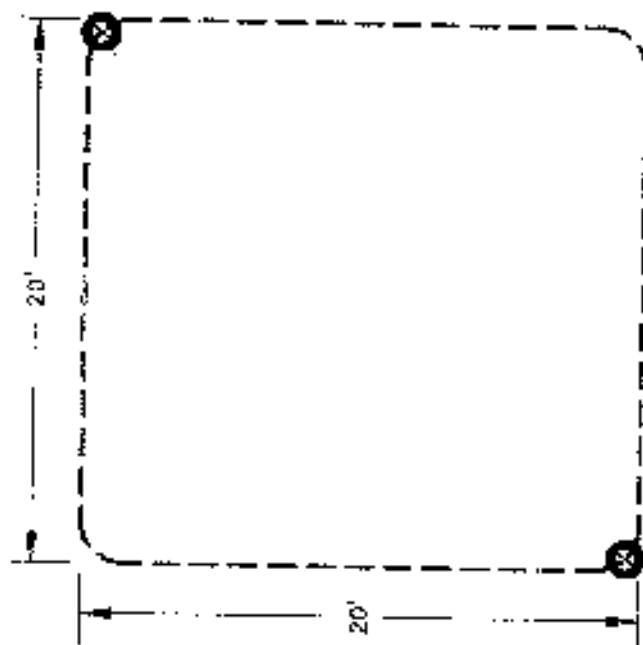
Conditions Snow; Cold; Windy; 3" L.Snow  
 Damp soil.

### Readings

(SPACING)

Location	5'	10'	20'	30'	40'	Comments
1	5.9	5.5	5.2	3.9	2.1	
2	3.9	3.6	3.4	2.9	3.6	
3	12.4	9.2	3.7	3.3	3.3	
4	6.0	5.9	4.9	3.4	2.7	
5	14.0	9.9	5.4	4.3	4.1	





# NOTES:

- BARE 4/0 AWG. COPPER CONDUCTOR BURIED 30" BELOW GRADE OR 6" BELOW FROST LINE
- ALL BENDS IN GROUND CONDUCTOR TO BE MADE WITH MIN. 12" RADIUS

K2-100S



<b>LYNCOLE</b>		CLIENT / END USER BRADLEY ENGINEERING CHTD./U.S. AIR FORCE
TECHNICAL SERVICES 3547 VOYAGER STREET, SUITE 104 TERRANCE, CA. 90503 (800)962-2610		FIGURE PROJECT NAME 2 EMI/TER SITES (PHASE 2)
SOIL DATA PROVIDED BY BRADLEY ENGINEERING CHTD.		TITLE GROUNDING OPTION
		LOCATION, CITY, STATE IDAHO < 1.2 OHMS
DRAWN BY MIRA	APPROVED BY [Signature]	DATE 01/20/89
REFERENCE NUMBER AB	SCALE NONE	LTS NUMBER 39028

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## SITE AC

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## GROUND TEST REPORT

SITE: Enhanced Training in Idaho; Site A DATE: 12-8-98

Attach map of sites TIME: 1:30 P.M.

LATITUDE: \_\_\_\_\_ (if available)

LONGITUDE: \_\_\_\_\_ (if available)

### THOSE CONDUCTING TESTS:

\_\_\_\_\_ David Hammond

\_\_\_\_\_ John Wanstrom

OTHERS: \_\_\_\_\_

### TEST CONDITIONS - SOIL OBSERVATIONS DESCRIBE:

Dry 3" Snow \_\_\_\_\_

Rock \_\_\_\_\_

Other \_\_\_\_\_

### TEST LAYOUT:

Attach test site plan \_\_\_\_\_

Approximate compass reading \_\_\_\_\_

## SOIL RESISTIVITY TEST

### Test Evaluation:

If in range of 8000 ohms/cm to 12,000 ohms/cm, no further testing required.

If higher range - test 3 and 4.

### Calculation:

$P = 191.5 AR$  ohm/cm

P = Soil resistivity (ohm/cm)

A = Distance in feet

R = Resistance in ohms from scale

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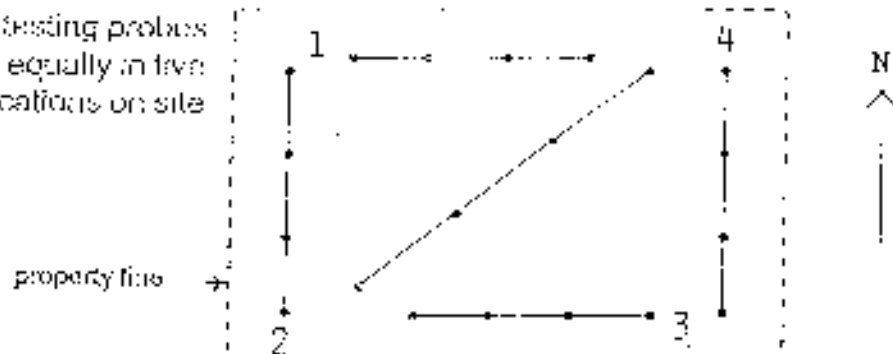
LYNCOLE EIT GROUNDING  
3047 Voyager St., #101  
Torrance, CA 90503  
(310) 214-5000  
FAX (310) 214-1114  
(800) 952-2654

# Soil Resistivity Testing

## 4 Point Method

Building & Soil Resistivity Profile

4 soil testing probes  
spaced equally in five  
locations on site



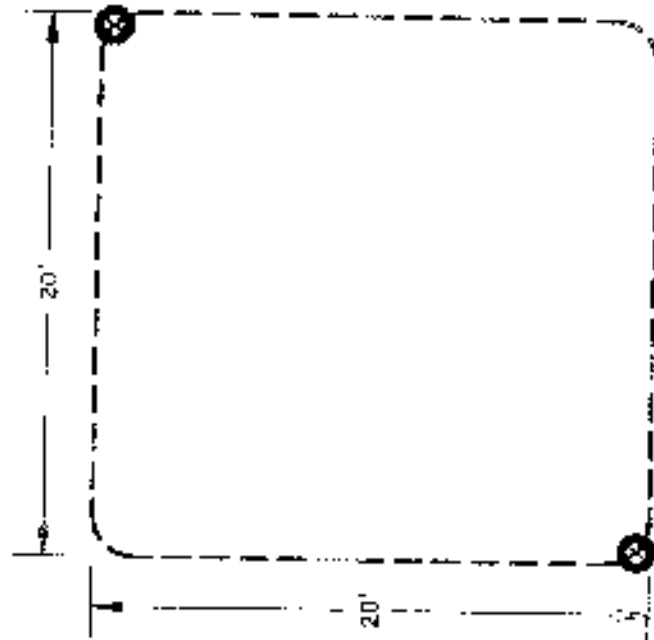
Date 12-8-99

Conditions 3" Snow Damp Soil

### Readings

(SPACING)

Location	5'	10'	20'	30'	40'	Comments
1	13.5	9.3	3.7	1.9	1.3	
2	39.1	14.0	6.2	3.1	1.6	
3	4.9	2.8	2.2	2.1	1.1	
4	29.3	11.9	3.5	2.2	1.1	
5	4.9	2.1	2.1	1.1	1.1	



# NOTES:

- BARE 4/C AWG. COPPER CONDUCTOR BURIED  
30" BELOW GRADE OR 6' BELOW FROST LINE
- ALL BENDS IN GROUND CONDUCTOR TO BE MADE  
WITH MIN 12" RADIUS
- ⊗ 42-12-25

<b>LYNCOLE</b> TECHNICAL SERVICES 2547 VOYAGER STREET, SUITE 104 TERRANCE, CA 90503 (800)562-2610		CLIENT / CDR USER BRADLEY ENGINEERING CHTD./U.S. AIR FORCE	
DRAWN BY MIRA		PROJECT NAME 3	
APPROVED BY <i>[Signature]</i>		EMITTER SITES (PHASE 2)	
DATE 01/20/99		TITLE GROUNDING OPTION	
LOCATION: CITY, STATE IDAHO		CALCULATED RESISTANCE < 15 OHMS	
REFERENCE NUMBER AC		SCALE NONE	
DATA PROVIDED BY BRADLEY ENGINEERING CHTD.		ITS NUMBER 89025	



## SITE AE

## GROUND TEST REPORT

SITE: Enhanced Training in Idaho: Site-AE DATE: 1-6-99

Attach map of sites \_\_\_\_\_ TIME: 11:00 a.m.

LATITUDE: 42 16 18 \_\_\_\_\_ (if available)

LONGITUDE: 115 25 30 \_\_\_\_\_ (if available)

### THOSE CONDUCTING TESTS:

\_\_\_\_\_John Wanstrom\_\_\_\_\_

\_\_\_\_\_David Hammond\_\_\_\_\_

OTHERS: \_\_\_\_\_

### TEST CONDITIONS - SOIL OBSERVATIONS DESCRIBE:

Dry \_\_\_\_\_

Rock \_\_\_\_\_

Other Frozen with mud the first 1/4 inch. Frozen layer is  
about 1 - 2 inches thick.

### TEST LAYOUT:

Attach test site plan \_\_\_\_\_

Approximate compass reading \_\_\_\_\_

## SOIL RESISTIVITY TEST

### Test Evaluation:

If in range of 8000 ohms/cm to 12,000 ohms/cm, no further testing required.

If higher range Test 3 and 4.

### Calculation:

P = 191.5 AR ohms/cm

P = Soil resistivity (ohm cm)

A = Distance in feet

R = Resistance in ohms from scale



Lyncole Site Grouting  
 3347 Veprisky St., #104  
 Torrance, CA 90503  
 (310) 214-4000  
 FAX (310) 214-1114  
 (800) 962-2650

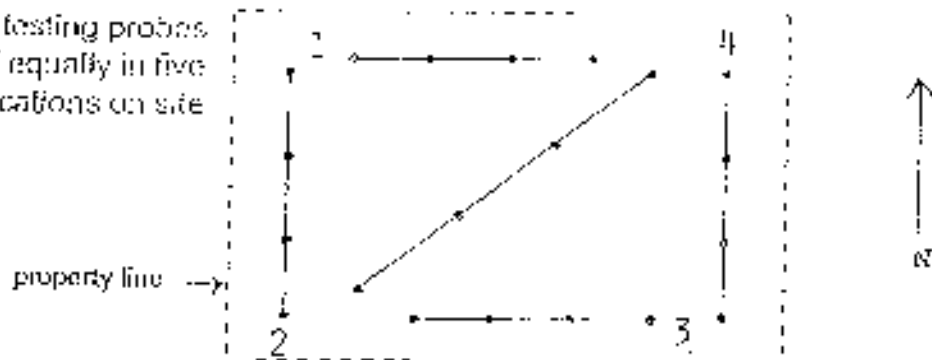
Site AE

# Soil Resistivity Testing

## 4 Point Method

Building & Soil Resistivity Profile

4 soil testing probes spaced equally in five locations on site



Date 1-6-99

Conditions Cool - frozen ground

### Readings

(SPACING)

Location	5'	10'	20'	30'	40'	Comments
1	5.6	5.0	4.0	3.4	3.0	
2	5.3	6.4	4.2	3.5	3.4	
3	5.5	3.6	3.1	3.6	2.8	
4	4.4	4.1	2.8	3.8	3.5	
5	5.7	4.0	4.7	3.8	3.5	

# NOTES:

BARE 4/0 AWG. COPPER CONDUCTOR BURIED  
30" BELOW GRADE OR 5" BELOW FROST LINE

ALL BENTS IN GROUND CONDUCTOR TO BE MADE  
WITH MIN. 12" RADII'S

K2-10CS



**LYNCOLE**

TECHNICAL SERVICES

3547 VOYAGER STREET, SUITE 104  
TORRANCE, CA 90503  
(800)962-2670

SEE DATA PROVIDED BY

BRADLEY ENGINEERING CHTD.

CLIENT / END USER

BRADLEY ENGINEERING CHTD./U.S. AIR FORCE

FILING PROJECT NAME

4 EMITTER SITES (PHASE 2)

TITLE

GROUNDING OPTION.

LOCATION: CITY, STATE

IDAHO CALCULATED RESISTANCE

APPROVED BY DATE

MRA IDAHO 01/21/99

REFERENCE NUMBER

AC NON# ITS NUMBER 99028

## SITE AF

## GROUND TEST REPORT

SITE: Enhanced Training in Idaho: Site AF DATE: 1-6-99

Attach map of sites TIME: 3:00 p.m.

LATITUDE: 42 19 46 (if available)

LONGITUDE: 115 28 38 (if available)

### THOSE CONDUCTING TESTS:

John Wanstrom  
David Hammond

### OTHERS:

### TEST CONDITIONS - SOIL OBSERVATIONS - DESCRIBE:

Dry \_\_\_\_\_  
Rock \_\_\_\_\_  
Other Partially frozen ground and 1/4 inch mud on surface.

### TEST LAYOUT:

Attach test site plan \_\_\_\_\_  
Approximate compass reading \_\_\_\_\_

## SOIL RESISTIVITY TEST

### Test Evaluation:

If in range of 8000 ohms/cm to 12,000 ohms/cm, no further testing required.

If higher range - test 3 and 4.

### Calculation:

$P = 191.5 AR \text{ ohm/cm}$   
 $P = \text{Soil resistivity (ohm-cm)}$   
 $A = \text{Distance in feet}$   
 $R = \text{Resistance in ohms from scale}$



Lyncole XIT Grounding,  
3547 Voyager St., #104  
Torrance, CA 90503  
PHONE 310-4000  
FAX (310) 314-1114  
(800) 557-2510

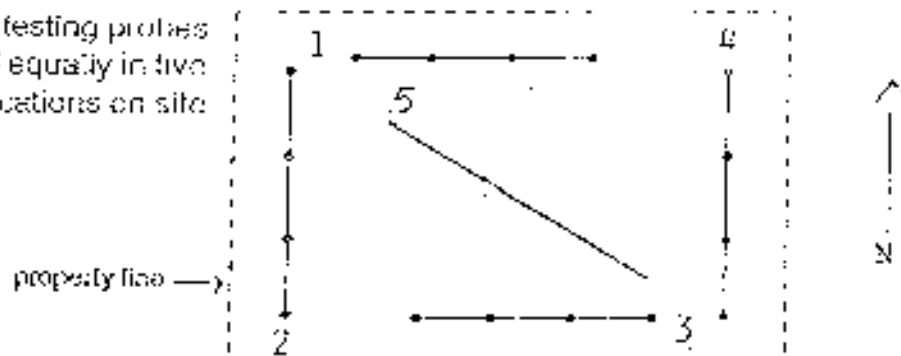
Site A7

# Soil Resistivity Testing

## 4 Point Method

Building & Soil Resistivity Profile

4 soil testing probes  
spaced equally in five  
locations on site



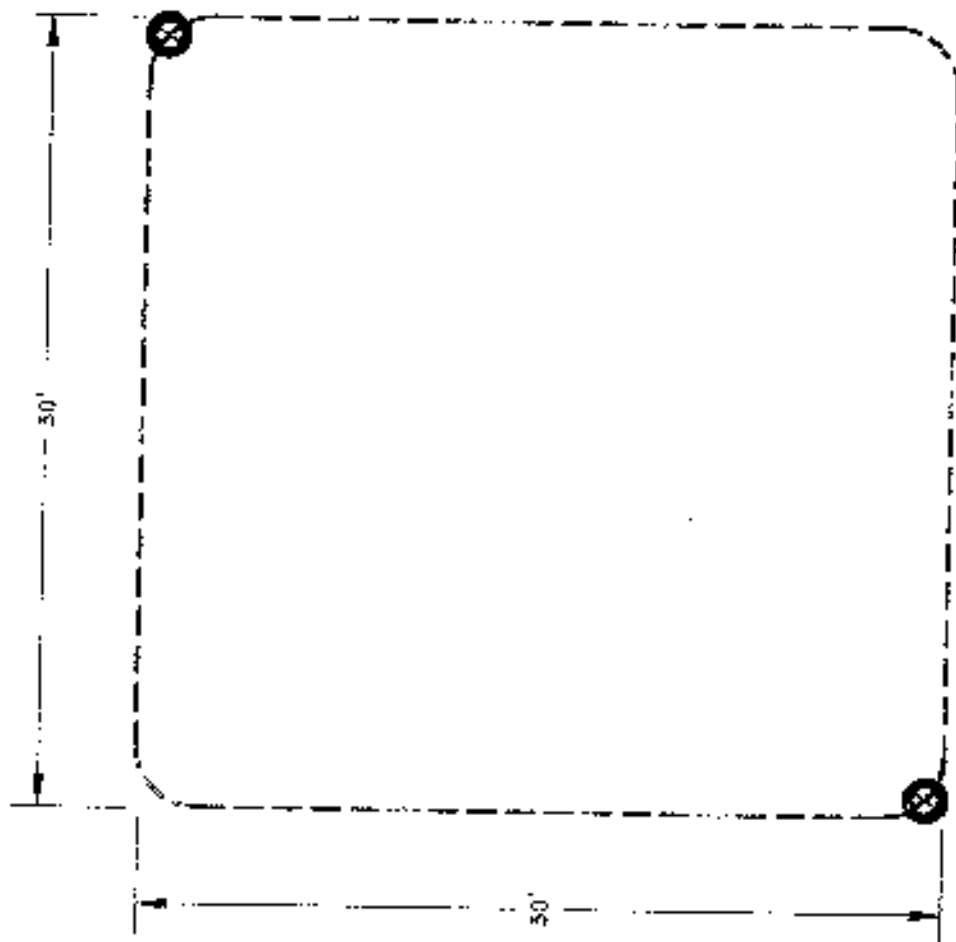
Date 1-6-99

Conditions \_\_\_\_\_

### Readings

### (SPACING)

location	5'	10'	20'	30'	40'	Comments
1	22.9	11.1	5.7	5.5	5.1	
2	3.4	4.3	3.5	4.5	4.7	
3	13.0	12.9	9.2	6.2	5.2	
4	5.0	7.1	5.5	5.3	3.9	
5	13.5	8.5	7.0	7.2	5.7	



# NOTES:

- BARE 4/0 AWG. COPPER CONDUCTOR BARRIER
- 30" BELOW GRADE OR 6" BELOW FIRST LINE
- ALL BENDS IN GROUND CONDUCTOR TO BE MADE WITH MIN. 12" RADIUS

<2-1005

**LYNCOLE**

TECHNICAL SERVICES

3547 VENTURER STREET, SUITE 104  
TERRANCE, CA 95503  
(800)962-2610

SEE DATA PROVIDED BY  
BRADLEY ENGINEERING CHTD.

CLIENT / END USER

BRADLEY ENGINEERING CHTD./U.S. AIR FORCE

FIGURE PROJECT NAME

5

EMITTER SITES (PHASE 2)

TITLE

GROUNDING OPTION

LOCATION: CITY, STATE

IDAHO

CALCULATED RESISTANCE

< 15 OHMS

DRAWN BY

MRA

APPROVED BY DATE

01/20/99

REFERENCE NUMBER

AF

SCALE

NONE

UTS NUMBER

93028



## SITE AG

## GROUND TEST REPORT

SITE: Enhanced Training in Idaho: Site A DATE: 1-7-99

Attach map of sites TIME: 10:00 a.m.

LATITUDE: 42 21 58 (if available)

LONGITUDE: 115 27 17 (if available)

### THOSE CONDUCTING TESTS:

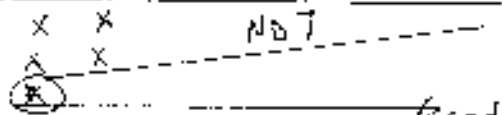
John Wanstrom  
David Hammond

OTHERS: \_\_\_\_\_

### TEST CONDITIONS - SOIL OBSERVATIONS - DESCRIBE:

Dry \_\_\_\_\_  
Rock \_\_\_\_\_  
Other Frozen and hard packed

### TEST LAYOUT:

 Per Jason; locate center of site Ag

Attach test site plan \_\_\_\_\_ (road) midway between

Approximate compass reading the NW corner stake of ND7 and the road

### SOIL RESISTIVITY TEST

#### Test Evaluation:

If in range of 8000 ohms/cm to 12,000 ohms/cm, no further testing required.

If higher range test 3 and 4.

#### Calculation:

$P = 191.5 AR^2$  ohm-cm

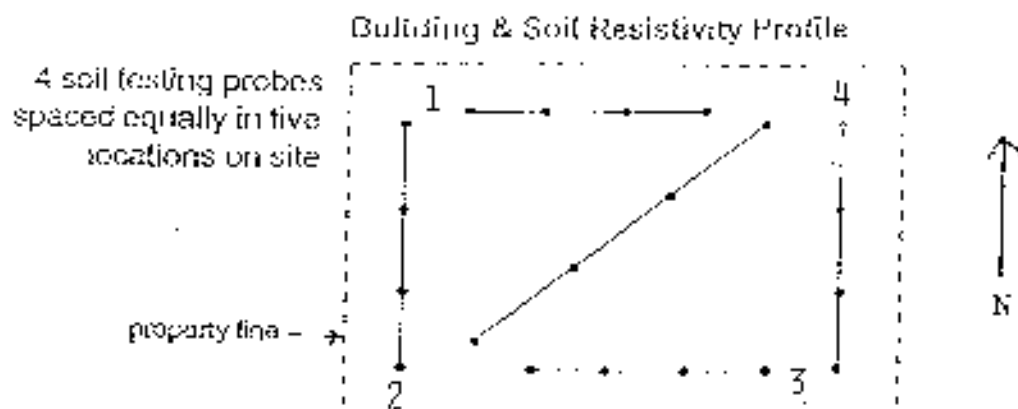
$P$  = Soil resistivity (ohm-cm)

$A$  = Distance in feet

$R$  = Resistance in ohms from scale

# Soil Resistivity Testing

## 4 Point Method



Date 2-7-99

Conditions .. Cold - frozen dirt ..

### Readings

(SPACING)

Location	5'	10'	20'	30'	40'	Comments
1	8.7	3.4	2.3	2.2	1.8	
2	6.1	2.8	1.7	1.8	2.0	
3	7.3	4.7	2.6	2.3	2.2	
4	4.8	4.1	2.2	2.0	2.0	
5	4.8	3.8	2.4	2.2	1.9	

# NOTES:

- BARE 4/0 AWG. COPPER CONDUCTOR BURIED  
30" BELOW GRADE OR 6" BELOW FROST LINE
- ALL BENDS IN GROUND CONDUCTOR TO BE MADE  
WITH MIN. 12" RADIUS
- KF-100S



<b>LYNCOLE</b>	
TECHNICAL SERVICES 3547 VOYAGER STREET, SUITE 104 TERRANCE, CA. 90503 (800)962-2610	
SCALE DATA PROVIDED BY BRADLEY ENGINEERING CHTD.	

CLIENT / END USER BRADLEY ENGINEERING CHTD./U.S. AIR FORCE	
FIGURE 7	PROJECT NAME EMITTER SITES (PHASE 2)
TITLE GROUNDING OPTION	
LOCATION CITY, STATE IDAHO	CALCULATED RESISTANCE < 12 OHMS
DRAWN BY MRA	APPROVED BY [Signature]
DATE 01/21/99	
REFERENCE NUMBER AG	SCALE NONE
LTS NUMBER 98028	

## SITE AH

## GROUND TEST REPORT

SITE: Enhanced Training in Idaho; Site AH DATE: 12-2-98

Attach map of sites TIME: 12:00

LATITUDE: \_\_\_\_\_ (if available)

LONGITUDE: \_\_\_\_\_ (if available)

### THOSE CONDUCTING TESTS:

\_\_\_\_\_ David Hammond

\_\_\_\_\_ John Wanstrom

OTHERS: \_\_\_\_\_

### TEST CONDITIONS - SOIL OBSERVATIONS - DESCRIBE:

Dry Moist \_\_\_\_\_

Rock \_\_\_\_\_

Other \_\_\_\_\_

\_\_\_\_\_

### TEST LAYOUT:

Attach test site plan \_\_\_\_\_

Approximate compass reading \_\_\_\_\_

## SOIL RESISTIVITY TEST

### Test Evaluation:

If in range of 8000 ohms/cm to 12,000 ohms/cm, no further testing required.

If higher range - test 3 and 4.

### Calculation:

$P = 191.6 AR \text{ ohm/cm}$

P = Soil resistivity (ohm/cm)

A = Distance in feet

R = Resistance in ohms from scale



LYNCOLE XIT Grounding  
3547 Mayfield St., #104  
Tomball, TX 77056  
(360) 214-4000  
FAX (360) 214-1114  
(509) 942-2600

# Soil Resistivity Testing

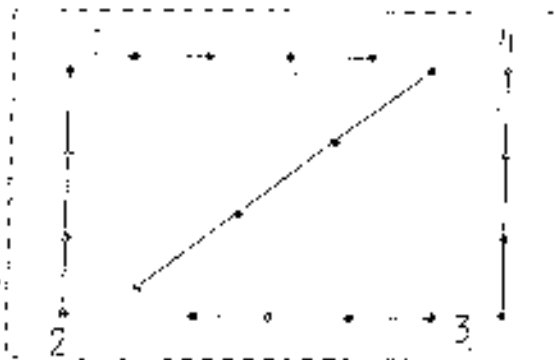
## 4 Point Method

Building & Soil Resistivity Profile

4 soil testing probes spaced equally in five locations on site

property line -

Road ↑ 100 yds



Date 12-2-98

Conditions Windy; Moist Ground

### Readings

(SPACING)

Location	5'	10'	20'	30'	40'	Comments
1	3.2	3.3	3.0	2.8	2.8	
2	2.5	2.1	2.3	2.3	2.4	
3	5.6	2.9	2.4	2.3	2.4	
4	2.6	2.3	2.5	2.3	2.2	
5	2.1	2.2	2.1	2.2	2.2	

**NOTES:**

BAKE 4/0 AWG COPPER CONDUCTOR BURIED  
30" BELOW GRADE OR 6' BELOW FROST LINE

ALL BENDS IN GROUND CONDUCTOR TO BE MADE  
WITH MIN. 12" RADIUS

KR-LUCS



<b>LYNCOLE</b>		CLIENT / END USER BRADLEY ENGINEERING CHTD./U.S. AIR FORCE	
TECHNICAL SERVICES		FIGURE PROJECT NAME 4	EMITTER SITES (PHASE 2)
3547 VOYAGER STREET, SUITE 104 DURRANCE, CA 90503 (800)968-2511		TITLE GROUNDING OPTION	
SOIL DATA PROVIDED BY BRADLEY ENGINEERING CHTD.		LOCATION: CITY, STATE IDAHO	CALCULATED RESISTANCE < 14 OHMS
		DRAWN BY MRA	APPROVED BY DATE 01/21/99
		REFERENCE NUMBER AH	SCALE NONE
		UTS NUMBER 99028	



## SITE A1

## GROUND TEST REPORT

SITE: Enhanced Training in Idaho; Site AJ DATE: 12-2-98

Attach map of sites TIME: 2:00 P.M.

LATITUDE: \_\_\_\_\_ (if available)

LONGITUDE: \_\_\_\_\_ (if available)

### THOSE CONDUCTING TESTS:

\_\_\_\_\_ David Hammond

\_\_\_\_\_ John Wanstrom

OTHERS: \_\_\_\_\_

### TEST CONDITIONS - SOIL OBSERVATIONS - DESCRIBE:

-Dry- Moist \_\_\_\_\_  
Rock \_\_\_\_\_  
Other \_\_\_\_\_

### TEST LAYOUT:

Attach test site plan \_\_\_\_\_  
Approximate compass reading \_\_\_\_\_

## SOIL RESISTIVITY TEST

### Test Evaluation:

If in range of 8000 ohms/cm to 12,000 ohms/cm, no further testing required.

If higher range test 3 and 4

### Calculation:

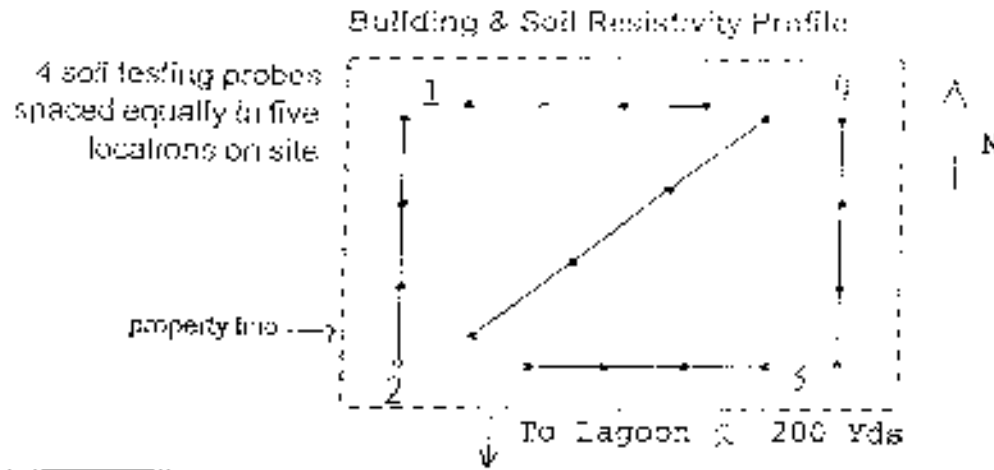
- P = 191.5 AR ohms/cm
- R = Soil resistivity (ohm cm)
- A = Distance in feet
- R = Resistance in ohms from scale



Lyncole Kit Grounding  
3517 Valley St., #104  
Tomball, TX 77058  
(281) 214-0000  
FAX (281) 214-1114  
(281) 982-2610

# Soil Resistivity Testing

## 4 Point Method



Date 12-2-98  
Conditions Moist and windy

### Readings

### (SPACING)

Location	5'	10'	20'	30'	40'	Comments
1	14.4	8.0	3.6	2.5	.9	
2	25.5	9.2	3.1	2.6	1.1	
3	5.5	2.6	1.6	.9	.8	
4	8.0	3.0	1.1	.8	.7	
5	2.5	2.4	2.2	1.9	1.3	

**NOTES:**

- BORE 4/2 ANG. COPPER CONDUCTOR BURIED  
30" BELOW GRADE OR 6' BELOW FROST LINE
- ALL BENDS IN GROUND CONDUCTOR TO BE MADE  
WITH MIN. 12" RADIUS
- 42 JOES



<b>LYNCOLE</b> TECHNICAL SERVICES 3547 VEYAGER STREET, SUITE 104 TUCURANCE, CA 90503 (800)962-2610		CLIENT / END USER BRADLEY ENGINEERING CHTD./U.S. AIR FORCE	
		FIGURE B	PROJECT NAME EMITTER SITES (PHASE 2)
TITLE GROUNDING OPTION		LOCATION CITY, STATE IDAHO	CALCULATED RESISTANCE < 10 OHMS
DRAWN BY MRA	APPROVED BY <i>[Signature]</i>	DATE 01/20/98	
REFERENCE NUMBER A1		SCALE NON'	PLT. NUMBER 99028
NO. DATA PROVIDED BY BRADLEY ENGINEERING CHTD.			

## SITE AJ

## GROUND TEST REPORT

SITE: Enhanced Training in Idaho; Site AJ DATE: 12-8-98

Attach map of sites

TIME: 2:30 P.M.

LATITUDE: \_\_\_\_\_ (if available)

LONGITUDE: \_\_\_\_\_ (if available)

THOSE CONDUCTING TESTS:

David Hammond

John Wanstrom

OTHERS:

TEST CONDITIONS - SOIL OBSERVATIONS - DESCRIBE:

Dry 3" Snow  
Rock  
Other

TEST LAYOUT:

Attach test site plan \_\_\_\_\_  
Approximate compass reading \_\_\_\_\_

## SOIL RESISTIVITY TEST

Test Evaluation:

If in range of 8000 ohms/cm to 12,000 ohms/cm, no further testing required.

If higher range - test 3 and 4.

Calculation:

$P = 191.5 \text{ AH ohm/cm}$

P = Soil resistivity (ohm-cm)

A = Distance in feet

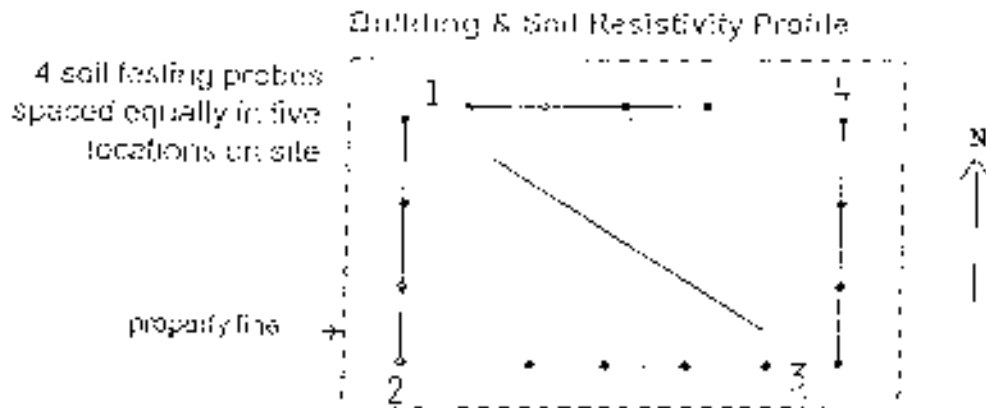
R = Resistance in ohms from scale



Lyncole XIT Grounding  
 3047 Vesper St., #102  
 Torrance, CA 90503  
 (310) 214-4930  
 FAX (310) 214-1114  
 (800) 942-2646

# Soil Resistivity Testing

## 4 Point Method



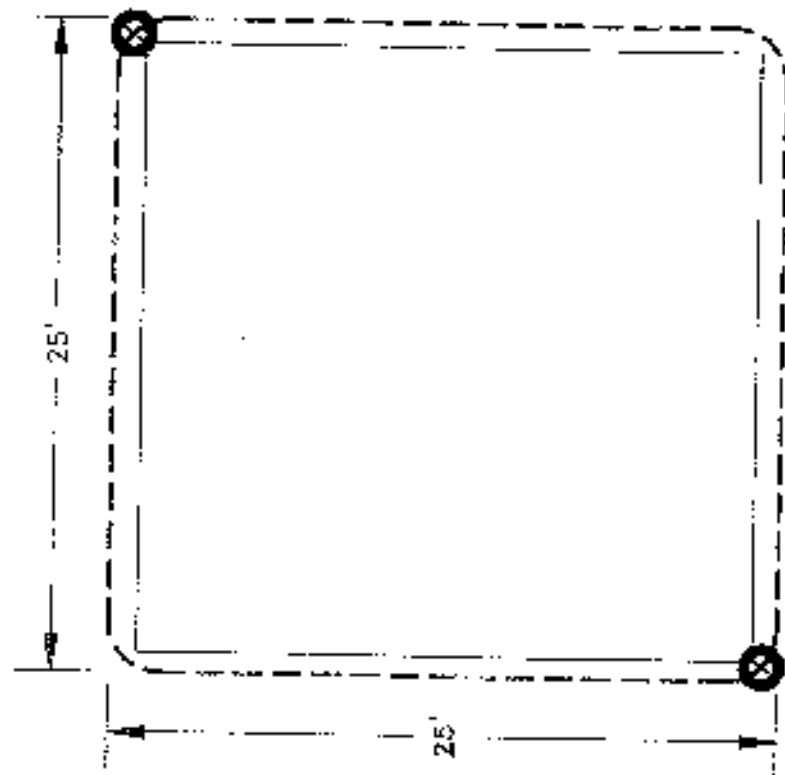
Date 12-8-98

Conditions 2" Snow, Damp Soil

### Readings

(SPACING)

Location	5'	10'	20'	30'	40'	Comments
1	6.4	6.2	3.9	3.6	3.0	
2	19.6	13.7	9.1	7.7	6.2	
3	14.9	9.2	6.9	4.3	4.2	
4	14.6	8.8	5.4	4.5	3.8	
5	26.0	9.0	5.0	4.1	3.6	



# NOTES:

--- BARE 4/0 AWG COPPER CONDUCTOR BURIED  
36" BELOW GRADE OR 6" BELOW FROST LINE

ALL BENTS IN GROUND CONDUCTOR TO BE MADE  
WITH MIN. 12" RADIUS

KE-1003

**LYNCOLE**

TECHNICAL SERVICES

3547 VOYAGER STREET, SUITE 104

TORRANCE, CA 90503

(800)962-2610

DATE: DATA PROVIDED BY

BRADLEY ENGINEERING CHTD.

CLIENT / END USER

BRADLEY ENGINEERING CHTD./U.S. AIR FORCE

FIGURE PROJECT NAME

9

EMITTER SITES (PHASE 2)

TITLE

GROUNDING OPTION

LOCATION: CITY, STATE

IDAHO

CALCULATED RESISTANCE

< 15 OHMS

DESIGNED BY

MRA

DATE

01/20/99

REFERENCE NUMBER

AJ

SCALE

NON

THIS DRAWING

99028



SITE AK

## GROUND TEST REPORT

SITE: Enhanced Training in Idaho Site AK DATE: 1-8-99

Attach map of sites

TIME: 8:00 a.m.

LATITUDE: 42 39 40 (if available)

LONGITUDE: 115 46 50 (if available)

### THOSE CONDUCTING TESTS:

John Wanstrom

David Hammond

### OTHERS:

### TEST CONDITIONS - SOIL OBSERVATIONS - DESCRIBE:

Dry

Rock

Other Frozen

### TEST LAYOUT:

Attach test site plan

Approximate compass reading

## SOIL RESISTIVITY TEST

### Test Evaluation:

If in range of 8000 ohms/cm to 12,000 ohms/cm, no further testing required.

If higher range - test 3 and 4.

### Calculation:

$P = 191.5 AR$  ohm/cm

P = Soil resistivity (ohm-cm)

A = Distance in feet

R = Resistance in ohms from scale

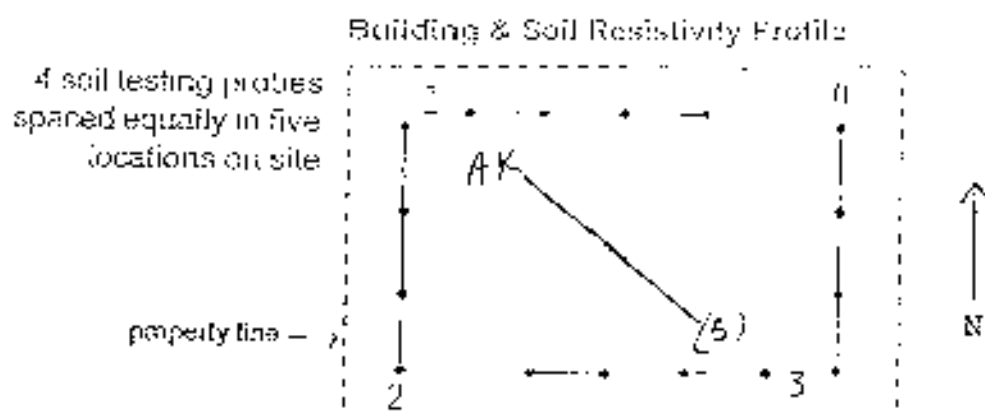


Lyncole XIT Grounding  
 2541 Voyager St., #104  
 Torrance, CA 90503  
 (415) 214-4026  
 FAX (415) 214-5114  
 (800) 667-2610

Site AK

# Soil Resistivity Testing

## 4 Point Method



Date 1-8-99

Conditions Cold, dry, frozen ground

### Readings

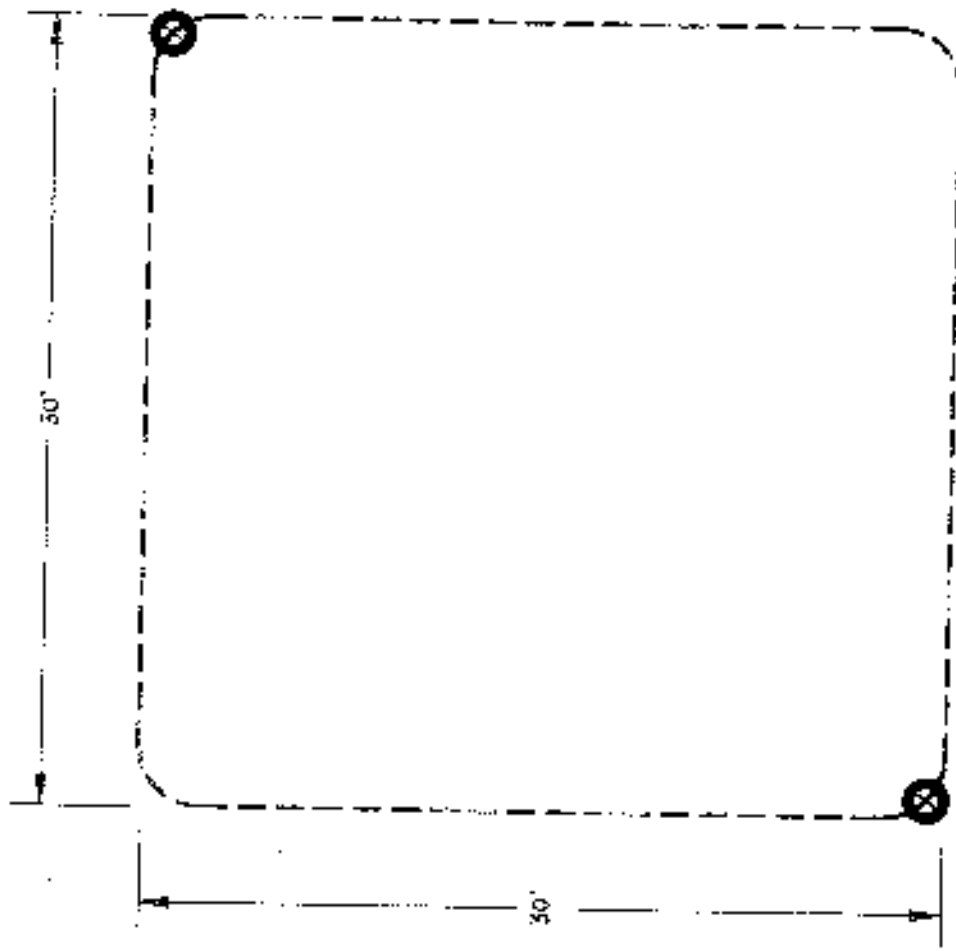
(SPACING)

Location	5'	10'	20'	30'	40'	Comments
1	32.5	19.8	4.7	2.9	2.3	
2	31.9	20.7	7.3	5.2	3.9	
3	30.9	23.5	6.7	4.8	3.9	
4	25.4	16.5	7.3	4.1	3.1	
5	28.5	15.6	5.4	3.6	2.5	

**NOTES:**

- BARE 4/0 AVG COPPER CONDUCTOR BURIED 20" BELOW GRADE OR 6" BELOW FREST LINE
- ALL BENDS IN GROUND CONDUCTOR TO BE MADE WITH MIN. 12" RADIUS

K2-1005



**LYNCOLE**

**TECHNICAL SERVICES**

2547 VOYAGER STREET, SUITE 104  
TERRANCE, CA 90563  
(800)362-2610

SOIL DATA PROVIDED BY  
BRADLEY ENGINEERING CHTD.

CLIENT / END USER

BRADLEY ENGINEERING CHTD./U.S. AIR FORCE

FIGURE PROJECT NAME

10

EMITTER SITES (PHASE 2)

TITLE

GROUNDING OPTION

LOCATION: CITY, STATE

IDAHO

INSULATED RESISTANCE

< 15 OHMS

DRAWN BY

MRA

APPROVED BY

DATE

01/20/99

REFERENCE NUMBER

AK

SCALE

NONE

LTS. JUDGE

89028

## SITE AM

## GROUND TEST REPORT

SITE: Enhanced Training in Idaho: Site AM DATE: 1-7-99

Attach map of sites

TIME: 1:30 P.M.

LATITUDE: 42 27 00 (if available)

LONGITUDE: 115 48 26 (if available)

THOSE CONDUCTING TESTS:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

OTHERS:

TEST CONDITIONS - SOIL OBSERVATIONS - DESCRIBE:

Dry Dry and not frozen  
Rock  
Other  
\_\_\_\_\_  
\_\_\_\_\_

TEST LAYOUT:

Attach test site plan \_\_\_\_\_  
Approximate compass reading \_\_\_\_\_

## SOIL RESISTIVITY TEST

Test Evaluation:

If in range of 8000 ohms/cm to 12,000 ohms/cm, no further testing required.

If higher range - test 3 and 4.

Calculation:

$P = 191.5 AR \text{ ohm/cm}$

P = Soil resistivity (ohm/cm)

A = Distance in feet

R = Resistance in ohms from scale



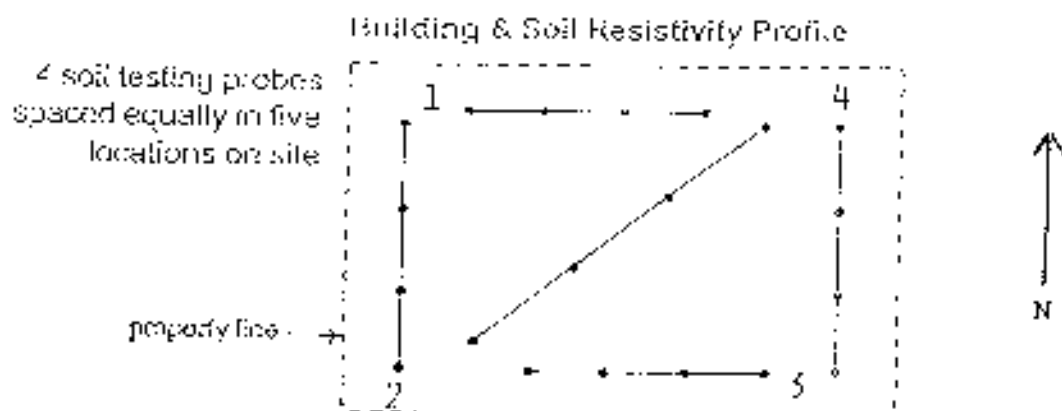
X.T. GROUNDING

Lynco X.T. Grounding  
 3547 Voyager St., #104  
 Torrance, CA 90503  
 (310) 214-8800  
 FAX (310) 214-1111  
 (310) 342-2519

Site AM

# Soil Resistivity Testing

## 4 Point Method



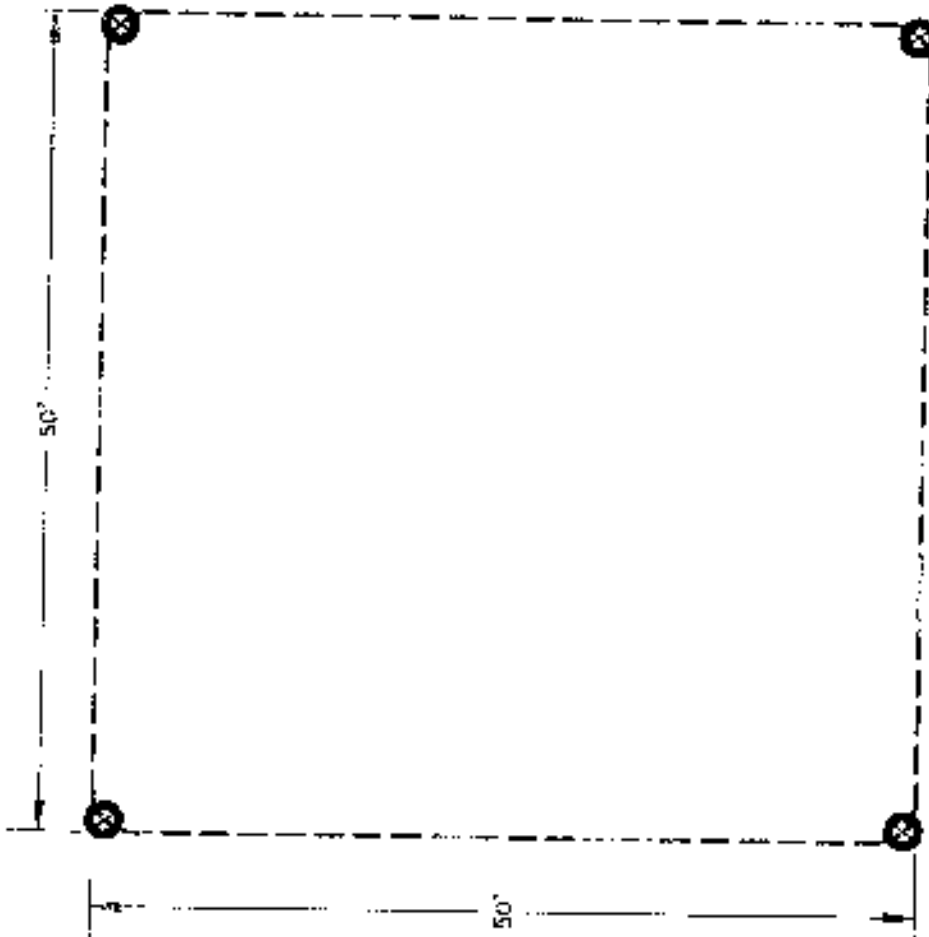
Date 1-7-99

Conditions Dry and cold

### Readings

(SPACING)

Location	5'	10'	20'	30'	40'	Comments
1	25.5	14.6	5.7	4.4	3.9	
2	27.0	24.5	8.5	5.9	5.4	
3	42.6	28.9	7.6	5.2	4.5	
4	51.7	30.9	10.6	7.6	4.5	
5	87.5	20.9	6.0	4.3	3.7	



# NOTES:

2AVE 4/0 AWG. COPPER CONDUCTOR BURIED  
20" BELOW GRADE OR 6" BELOW FROST LINE

ALL BENTS IN GROUND CONDUCTORS TO BE MADE  
WITH MIN. 12" RADIUS

K2-1001X

**LYNCOLE**

TECHNICAL SERVICES

3547 VOYAGER STREET, SUITE 104  
TERRANCE, CA. 90520  
(800)962-8630

SOIL DATA PROVIDED BY  
BRADLEY ENGINEERING CHTD.

CLIENT / END USER

BRADLEY ENGINEERING CHTD./U.S. AIR FORCE

FIGURE PROJECT NAME

11

EMITTER SITES (PHASE 2)

TITLE

GROUNDING OPTION

LOCATION CITY, STATE

IDAHO

CALCULATED RESISTANCE

< 15 OHMS

DRAWN BY

MRA

APPROVED BY DATE

01/20/99

REFERENCE NUMBER

AM

SCALE

NONE

LTS NUMBER

9802B



## SITE AQ

# GROUND TEST REPORT

Site: Enhanced Training in Idaho; Site AQ DATE: 11-24-98

Attach map of sites TIME: 12:00

LATITUDE: \_\_\_\_\_ (if available)

LONGITUDE: \_\_\_\_\_ (if available)

THOSE CONDUCTING TESTS:

John Wansbrough

David Hammond

**OTHERS:**

TEST CONDITIONS : SOIL OBSERVATIONS - DESCRIBE:

Dry \_\_\_\_\_

Rock Very

Other \_\_\_\_\_

**TEST LAYOUT:**

Attach test site plan \_\_

Approximate compass reading \_\_\_\_\_

### SOIL RESISTIVITY TEST

### Test Evaluation

If in range of 8000 ohms/cm to 12,000 ohms/cm, no further testing required.

If higher range test 3 and 4

Calculation:

P-19-5 AR changed

F - Soil resistivity (ohm cm):

$A$  = Distance in feet

R = Resistance in ohms from scale;



Lyncole XIT Grouting,  
Soil Manager, 21-2107  
Lubbock, TX 79401  
(817) 214-4399  
Fax (817) 214-4394  
1999, 2002, 2010

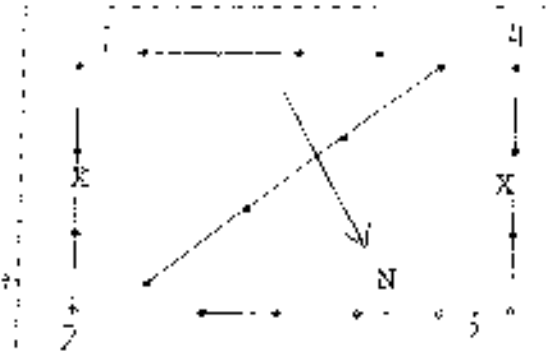
# Soil Resistivity Testing

## 4 Point Method

Building & Soil Resistivity Profile

4 soil testing probes  
spaced equally in five  
locations on site

property line -



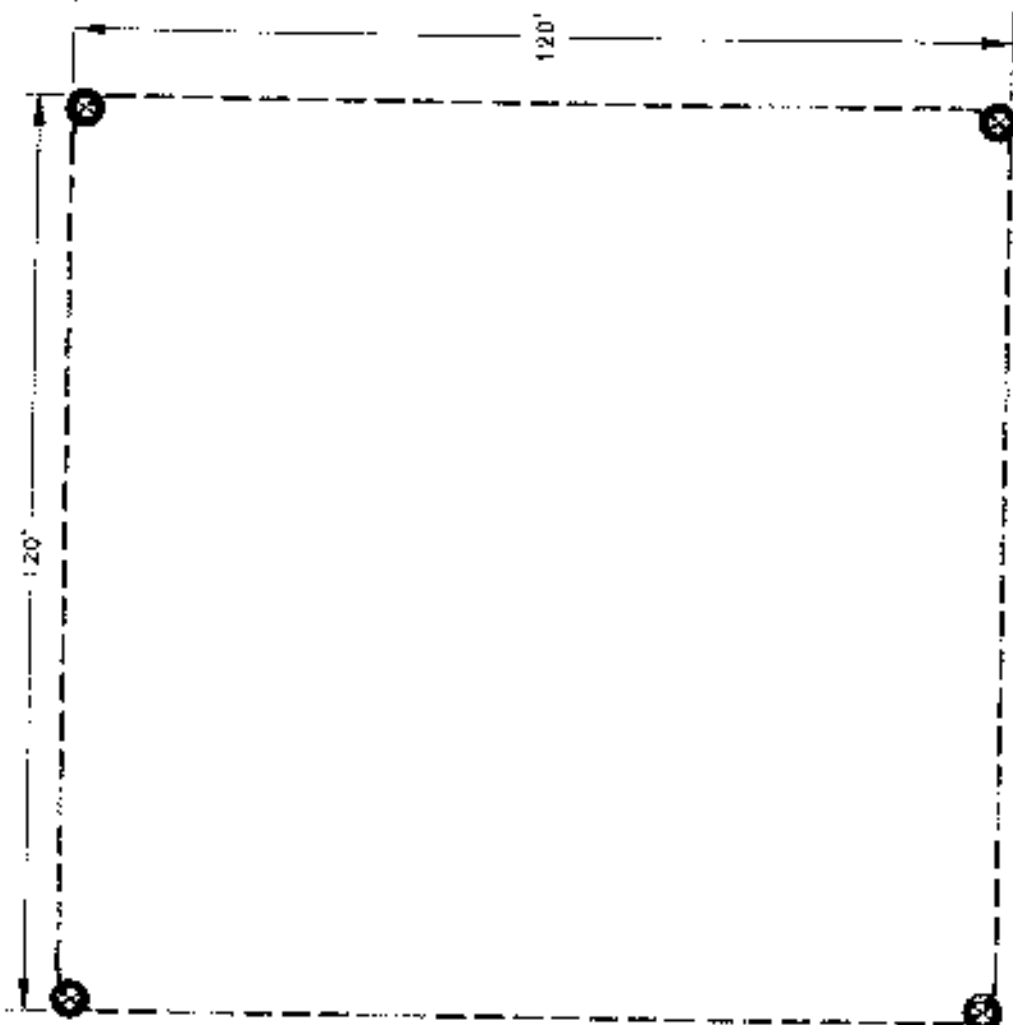
Date 11-24-95

Conditions \_\_\_\_\_ Mud \_\_\_\_\_ Rocky \_\_\_\_\_

### Readings

(SPACING)

Location	5'	10'	20'	30'	40'	Comments
1	50.6	26.	14.6	12.4	11.2	
2	42.3	21.3	13.3	14.9	12.4	
3	45.9	24.0	18.2	14.1	11.4	
4	20.4	15.6	18.6	16.1	15.0	
5	42.1	33.	22.7	16.9	13.6	



NOTES:

- BARE 4/0 AWG. COPPER CONDUCTOR BURIED 30" BELOW GRADE OR 6" BELOW FROST LINE
- ALL BENDS IN GROUND CONDUCTOR TO BE MADE WITH MIN. 12" RADIUS
- K2-100S

<b>LYNCOLE</b> <b>TECHNICAL SERVICES</b> 3547 VOYAGER STREET, SUITE 104 OVRANCE, CA. 90503 (500)962-2610		CLIENT / END USER		BRADLEY ENGINEERING CHTD./U.S.AIR FORCE	
		FIGURE	PROJECT NAME	EMITTER SITES (PHASE 2)	
		6			
		TITLE			
		GROUNDING OPTION			
		LOCATION- CITY, STATE	CALCULATED RESISTANCE		
		IDaho	< 15 OHMS		
		DRAWN BY	APPROVED BY	DATE	
		MRA	<i>[Signature]</i>	01/20/99	
		REFERENCE NUMBER	CON F		
		AQ	NONE		
		U.S. NUMBER	98028		
SOI DATA PROVIDED BY BRADLEY ENGINEERING CHTD.					

SITE AT

## GROUND TEST REPORT

SITE: Enhanced Training in Idaho Site AT DATE: 11-11-98

Attach map of sites TIME: 4:00 P.M.

LATITUDE: \_\_\_\_\_ (if available)

LONGITUDE: \_\_\_\_\_ (if available)

THOSE CONDUCTING TESTS:

\_\_\_\_\_ John Wanstrom \_\_\_\_\_  
\_\_\_\_\_ David Hammond \_\_\_\_\_

**OTHERS:**

TEST CONDITIONS - SOIL OBSERVATIONS - DESCRIBE:

Dry \_\_\_\_\_ Semi Dry to Moist \_\_\_\_\_ Not dusty dry \_\_\_\_\_  
Rock \_\_\_\_\_ Partial \_\_\_\_\_  
Other \_\_\_\_\_

**TEST LAYOUT:**

Attach test site plan \_\_\_\_\_  
Approximate compass reading \_\_\_\_\_

### SOIL RESISTIVITY TEST

### Test Evaluation:

If in range of 8000 ohms/cm to 12,000 ohms/cm, no further testing required.

If higher range - test 3 and 4.

Calculation:

P = 191.5 AR ohm/cm

ρ = Soil resistivity (Ωm cm)

A = Distance in feet

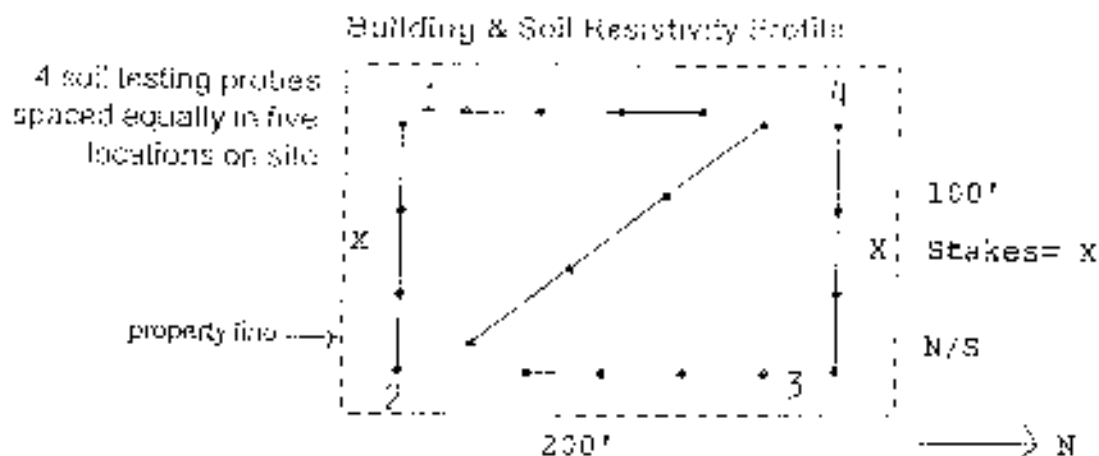
 $R$  = Resistance  $\times$  string from scale



Lyncole XIT Grounding  
 3547 Voyager St., #104  
 Torrance, CA 90503  
 (310) 214-4000  
 FAX (310) 214-1114  
 (800) 962-2610

# Soil Resistivity Testing

## 4 Point Method



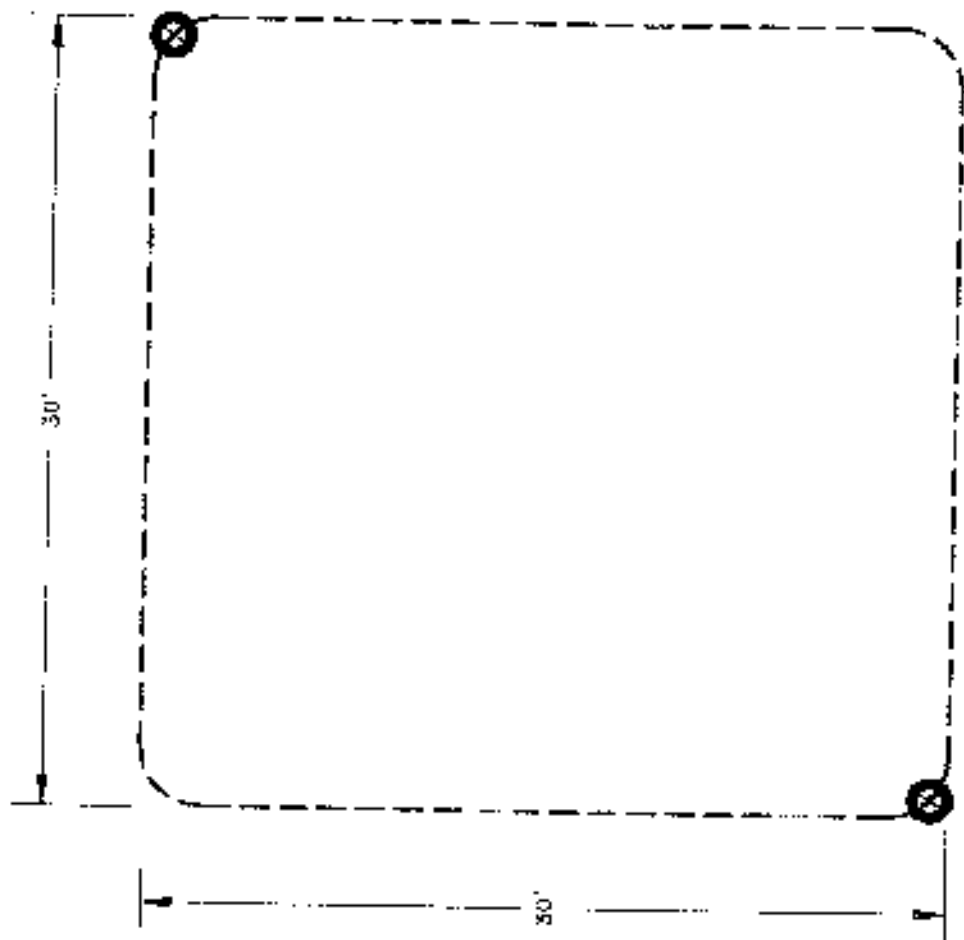
Date 11-11-98

Conditions Cool Partly Cloudy

### Readings

#### (SPACING)

Location	5'	10'	20'	30'	40'	Comments
1	46.1	21.4	4.50	2.01	1.74	
2	28.5	7.45	2.69	1.62	1.76	
3	63.1	29.7	4.95	2.55	2.35	
4	35.7	18.74	4.55	2.38	2.34	
5	13.99	15.48	4.81	2.75	2.76	



**NOTES:**

- BARF 4/0 AWG. COPPER CONDUCTOR BURIED 30" BELOW GRADE OR 6" BELOW FRONT LINE
- A. I. BENDS IN GROUND CONDUCTOR TO BE MADE WITH MIN. 12" RADIUS
- K2 LOCS

<b>LYNCOLE</b> <b>TECHNICAL SERVICES</b> 3547 VOYAGER STREET, SUITE 104 TORRANCE, CA 90503 (800)952-2610		CLIENT / END USER BRADLEY ENGINEERING CHTD./U.S. AIR FORCE	
		FIGURE 12	PROJECT NAME EMITTER SITES (PHASE 2)
TITLE GROUNDING OPTION		LOCATION CITY, STATE IDAHO	CALCULATED RESISTANCE < 98 OHMS
DRAWN BY MRA	APPROVED BY <i>[Signature]</i>	DATE 01/20/99	SCALE NONE
SOIL DATA PROVIDED BY BRADLEY ENGINEERING CHTD.		REFERENCE NUMBER AT	PITS NUMBER 98028



## SITE AU

## GROUND TEST REPORT

SITE: Enhanced Training in Idaho: Site AII DATE: 11-24-98

Attach map of sites TIME: 3:30 P.M.

LATITUDE: \_\_\_\_\_ (if available)

LONGITUDE: \_\_\_\_\_ (if available)

### THOSE CONDUCTING TESTS:

\_\_\_\_\_John Wanstrom\_\_\_\_\_  
\_\_\_\_\_David Hammond\_\_\_\_\_

### OTHERS:

### TEST CONDITIONS - SOIL OBSERVATIONS DESCRIBE:

Dry \_\_\_\_\_  
Rock Partial \_\_\_\_\_  
Other Mid \_\_\_\_\_

### TEST LAYOUT:

Attach test site plan \_\_\_\_\_  
Approximate compass reading \_\_\_\_\_

## SOIL RESISTIVITY TEST

### Test Evaluation:

If in range of 8000 ohms/cm to 12,000 ohms/cm, no further testing required.

If higher range - test 3 and 4.

### Calculation:

$P = 191.5 AR \text{ ohm/cm}$   
 $P$  = Soil resistivity (ohm-cm)  
 $A$  = Distance in feet  
 $R$  = Resistance in ohms from scope



LYNCOLE XIT GROUNDING  
 2041 Voyager St. #100  
 Torrance, CA 90507  
 (408) 214-4300  
 FAX (408) 214-1114  
 (800) 934-2114

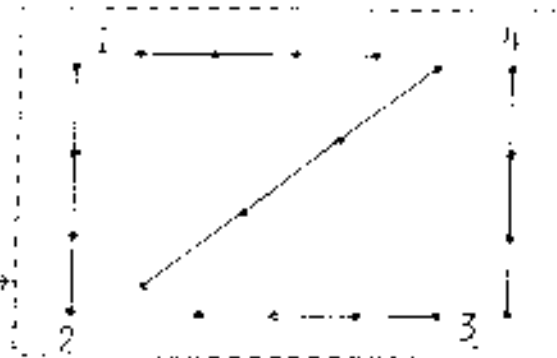
# Soil Resistivity Testing

## 4 Point Method

Building & Soil Resistivity Profile

4 soil testing probes  
 spaced equally in five  
 locations on site

property line -



Date 11-24-98

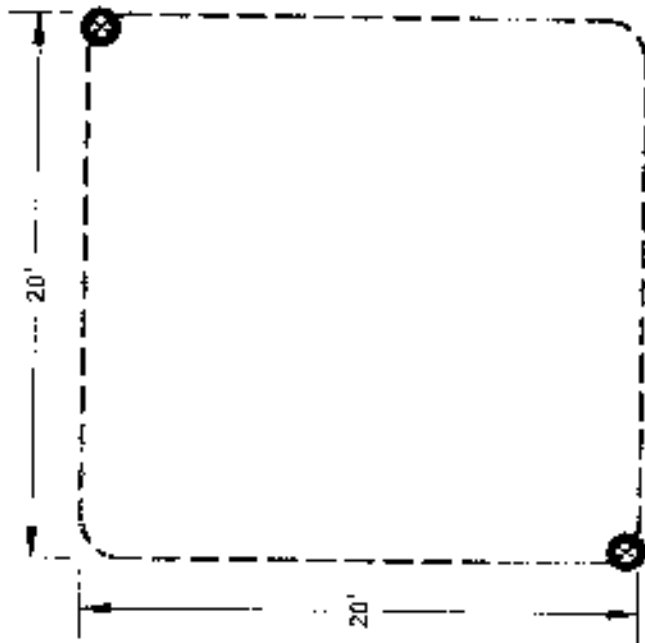
Conditions Wet; Cold; Muddy

### Readings

(SPACING)

Location	5'	10'	20'	30'	40'	Comments
1	11.0	6.0	3.2	1.7	1.5	
* 2	22.8	9.3	3.4	2.9	2.1	
3	24.1	10.5	4.4	3.4	2.2	
* 4	52.5	6.7	3.3	2.6	1.5	
5	14.1	9.5	5.3	2.4	1.9	

\* 30', 25', 20', 10', 5'



# NOTES:

--- BARE 4/0 AWG COPPER CONDUCTOR BURIED  
30" BELOW GRADE OR 6' BELOW FROST LINE

ALL BENDS IN GROUND CONDUCTOR TO BE MADE  
WITH MIN 12" RADII'S

K2-100S

<b>LYNCOLN</b> TECHNICAL SERVICES 3547 VOYAGER STREET, SUITE 104 TORRANCE, CA 90503 (800)962-2630		CLIENT / END USER BRADLEY ENGINEERING CHTD./U.S. AIR FORCE	
SOIL DATA PROVIDED BY BRADLEY ENGINEERING CHTD.		FIGURE 13	PROJECT NAME EMITTER SITES (PHASE 2)
TITLE GROUNDING OPTION		LOCATION CITY, STATE IDAHO	
DRAWN BY MIRA		APPROVED BY <i>[Signature]</i>	CALCULATED RESISTANCE < 13 OHMS
REFERENCE NUMBER AU		DATE 01/20/99	SCALE NONE
9902B			

SITE AV

## GROUND TEST REPORT

SITE: Enhanced Training in Idaho, Site AV DATE: 11-24-98

Attach map of sites \_\_\_\_\_ TIME: 3:30 P.M.

LATITUDE: \_\_\_\_\_ (if available)

LONGITUDE: \_\_\_\_\_ (if available)

### THOSE CONDUCTING TESTS:

\_\_\_\_\_  
John Wanstrom  
\_\_\_\_\_  
David Hammond  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### OTHERS:

### TEST CONDITIONS - SOIL OBSERVATIONS - DESCRIBE:

Dry \_\_\_\_\_  
Rock Partial \_\_\_\_\_  
Other Mud \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### TEST LAYOUT:

Attach test site plan \_\_\_\_\_  
Approximate compass reading \_\_\_\_\_

## SOIL RESISTIVITY TEST

### Test Evaluation:

If in range of 8000 ohms/cm to 12,000 ohms/cm, no further testing required.

If higher range - test 3 and 4.

### Calculation:

$P = 191.5 AR$  ohm-cm  
 $P$  = Soil resistivity ohm-cm  
 $A$  = Distance in feet  
 $R$  = Resistance in ohms from scale

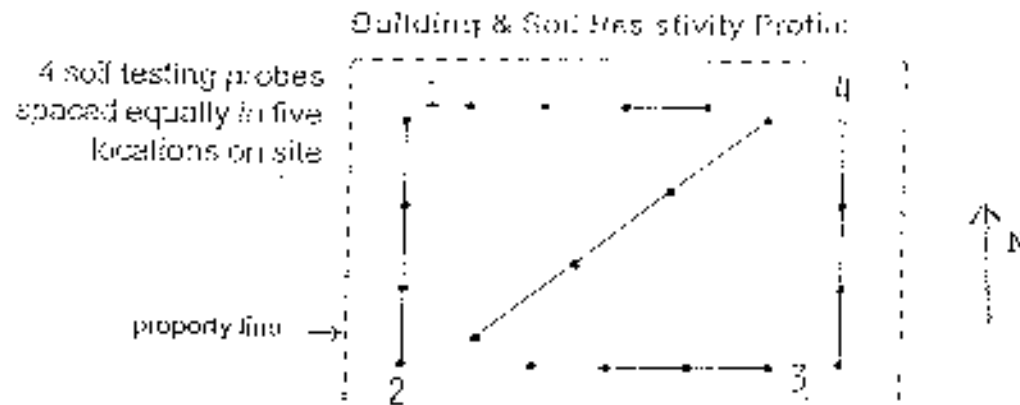


X.T. GROUNDING

LYNCOLE X.T. Grounding  
 3547 Voyager St., #104  
 Irvine, CA 92614  
 (949) 214-4500  
 FAX: (949) 214-1114  
 (800) 552-7610

# Soil Resistivity Testing

## 4 Point Method

Date 11-24-98Conditions Cold; Wet; SnowingGround: Moist/ Muddy

### Readings

(SPACING)

Location	5'	10'	20'	30'	40'	Comments
1	3.0	1.	.8	.7	.7	
2	2.6	1.1	.7	.6	.6	
3	3.6	1.3	.7	.6	.5	
4	6.8	2.5	1.	.7	.5	
5	3.2	1.3	1.5	.8	.6	

# NOTES:

- BARE 4/0 AWG COPPER CONDUCTOR BARED 30" BELOW GRADE OR 6' BELOW FIRST LINE
- ALL BENDS IN GROUND CONDUCTOR TO BE MADE WITH MIN 12" RADIUS

K2-10CS



<b>LYNCOLE</b>		CLIENT / ENG USER BRADLEY ENGINEERING CHTD./U.S. AIR FORCE	
TECHNICAL SERVICES		FIGURE PROJECT NAME 4	EMITTER SITES (PHASE 2)
3547 VOYAGER STREET, SUITE 104 TERRANCE, CA 90503 (800)962-2610		TITLE GROUNDING OPTION	
SOIL DATA PROVIDED BY BRADLEY ENGINEERING CHTD.		LOCATION: CITY, STATE IDAHO	CALCULATED RESISTANCE < 14 OHMS
		DRAWN BY MRA	APPROVED BY DATE 01/21/99
		REFERENCE NUMBER AV	SCALE NON
		LTS NUMBER 99028	



## SITE BA

## GROUND TEST REPORT

SITE: Enhanced Training in Idaho; Site BA DATE: 12-2-98

Attach map of sites TIME: 4:30 P.M.

LATITUDE: \_\_\_\_\_ (if available)

LONGITUDE: \_\_\_\_\_ (if available)

### THOSE CONDUCTING TESTS:

\_\_\_\_\_David Hammond\_\_\_\_\_

\_\_\_\_\_John Vanstrom\_\_\_\_\_

OTHERS: \_\_\_\_\_

### TEST CONDITIONS - SOIL OBSERVATIONS - DESCRIBE:

Dry: Moist \_\_\_\_\_

Rock \_\_\_\_\_

Other \_\_\_\_\_

### TEST LAYOUT:

Attach test site plan \_\_\_\_\_

Approximate compass reading \_\_\_\_\_

## SOIL RESISTIVITY TEST

### Test Evaluation:

If in range of 8000 ohms/cm to 12,000 ohms/cm, no further testing required.

If higher range test 3 and 4.

### Calculation:

$P = 191.5 \text{ AR ohm/cm}$

P = Soil resistivity (ohm-cm)

A = Distance in feet

R = Resistance in ohms from scale



LYNCOLE XIT Grounding  
3347 Voyager St., #104  
Fountain, CO. 80903  
(310) 214-4000  
FAX (310) 214-1114  
(800) 962-2010

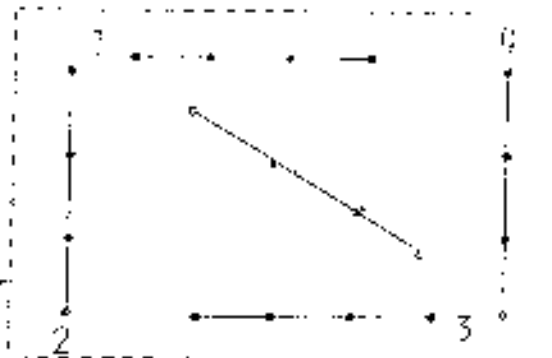
# Soil Resistivity Testing

## 4 Point Method

Building & Soil Resistivity Profile

4 soil testing probes  
spaced equally in five  
locations on site

property line



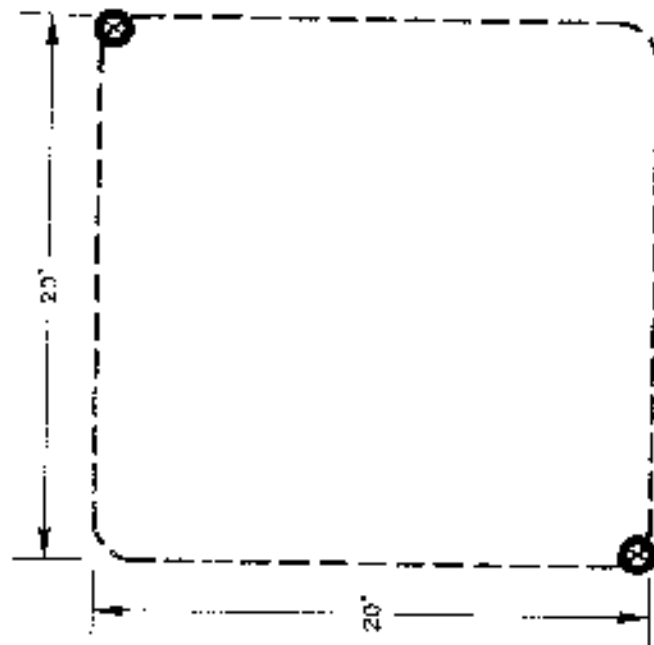
Date 12-2-98

Conditions \_\_\_\_\_

### Readings

(SPACING)

Location	5'	10'	20'	30'	40'	Comments
1	6.8	4.5	2.8	2.1	1.7	
2	28	15.0	10.8	6.0	4.8	
3	34.8	19.3	10	8.0	5.7	
4	7.2	2.3	.6	.5	.5	
5	6.5	3.8	2.4	2.1	1.8	



# NOTES:

BARL 470 AWG. COPPER CONDUCTOR BENTED  
30" BELOW GRADE OR 6" BELOW FROST LINE

ALL BENTS IN GROUND CONDUCTOR TO BE MADE  
WITH MIN. 12" RADIUS

K2-100S

**LYNCOLE**

**TECHNICAL SERVICES**  
3547 VICTOR STREET, SUITE 104  
CORRANCE, CA. 90503  
C8001962-2610

STIL DATA PROVIDED BY  
BRADLEY ENGINEERING CHTD.

CLIENT / END USER  
BRADLEY ENGINEERING CHTD./U.S. AIR FORCE

FIGURE PROJECT NAME  
14

TITLE  
EMITTER SITES (PHASE 2)

LOCATION CITY, STATE  
IDAHO

TOWN BY  
MIRA

REFERENCE NUMBER  
BA

SCALE  
NON

LTS NUMBER  
99028

GROUNDING OPTION  
CALCULATED RESISTANCE  
< 13 OHMS

DATE  
01/20/99

## SITE BB

## GROUND TEST REPORT

SITE: Enhanced Training in Idaho; Site BB DATE: 12-2-98

Attach map of sites \_\_\_\_\_ TIME: 3:00 P.M.

LATITUDE: \_\_\_\_\_ (if available)

LONGITUDE: \_\_\_\_\_ (if available)

### THOSE CONDUCTING TESTS:

\_\_\_\_\_  
David Hammond  
\_\_\_\_\_  
John Wanstrom  
\_\_\_\_\_

### OTHERS:

### TEST CONDITIONS SOIL OBSERVATIONS - DESCRIBE:

~~Dry~~ Moist \_\_\_\_\_  
Rock \_\_\_\_\_  
Other \_\_\_\_\_  
\_\_\_\_\_

### TEST LAYOUT:

Attach test site plan \_\_\_\_\_  
Approximate compass reading \_\_\_\_\_

### SOIL RESISTIVITY TEST

#### Test Evaluation:

It is in range of 8000 ohms/cm to 12,000 ohms/cm, no further testing required.

If higher range - test 3 and 4.

#### Calculation:

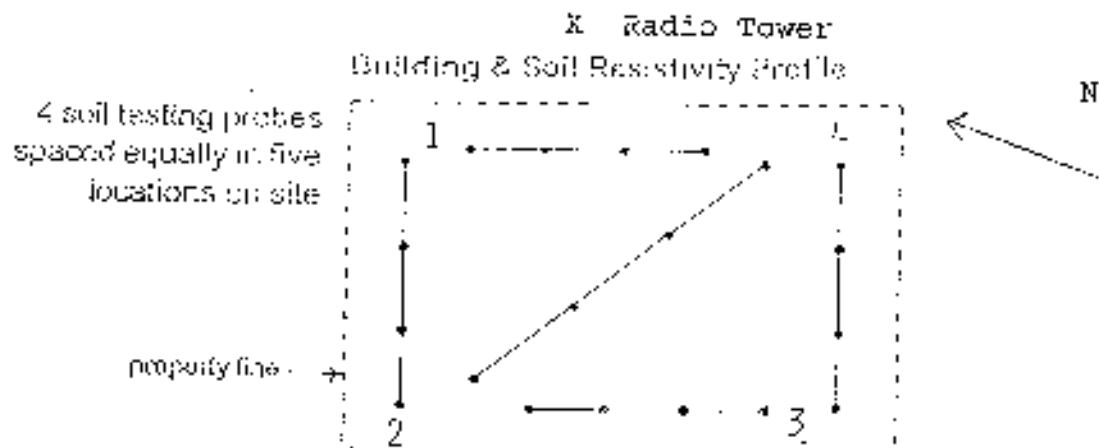
$P = 191.6 \frac{AR}{\rho}$  ohm/cm  
 $P$  = Soil resistivity (ohm-cm)  
 $A$  = Distance in feet  
 $R$  = Resistance in ohms from scope



Lyncole XIT Grounding  
 3547 Vantage St. #104  
 Commerce, CA 95501  
 (916) 214-4000  
 FAX (916) 214-1114  
 (800) 542-2630

# Soil Resistivity Testing

## 4 Point Method



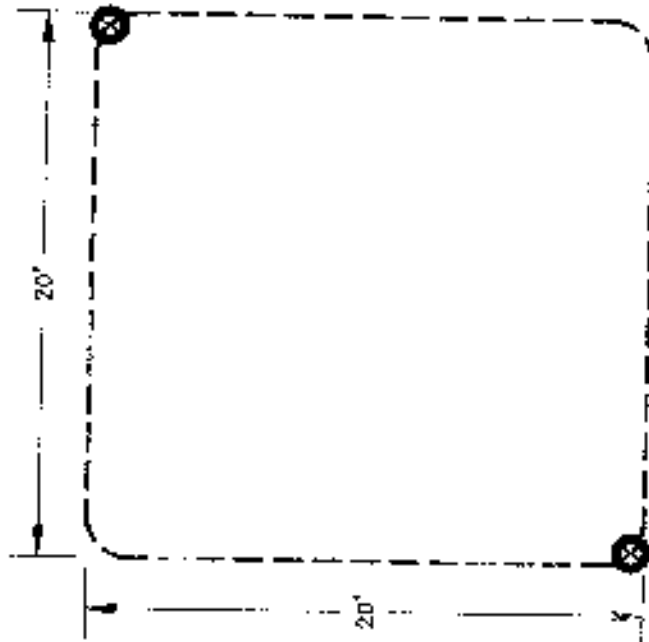
Date 12-2-98

Conditions

### Readings

(SPACING)

Location	5'	10'	20'	30'	40'	Comments
1	9.1	2.8	1.3	1.2	1.0	
2	6.1	5.3	5.1	4.6	2.7	
3	16.5	7.1	3.3	2.3	1.8	
4	15.6	15.3	6.4	2.9	1.8	
5	3.1	3.2	1.8	1.6	1.7	



# NOTES:

--- BARE 4/0 AWG. COPPER CONDUCTOR SURIED  
30" BELOW GRADE OR 6" BELOW FROST LINE

ALL BENDS IN GROUND CONDUCTOR TO BE MADE  
WITH MIN 12" RADIUS

K2-1075



<b>LYNCOLE</b> <b>TECHNICAL SERVICES</b> 2547 VEYAGER STREET, SUITE 204 TERRANCE, CA, 90503 (310) 262-2410		CLIENT / END USER <b>BRADLEY ENGINEERING CHTD./U.S.AIR FORCE</b>	
DRAWN BY MRA		PROJECT NAME 15	
APPROVED BY <i>[Signature]</i>		DATE 01/20/89	
REFERENCE NUMBER BB		SCALE NONE	
TITLE GROUNDING OPTION		CALCULATED RESISTANCE < 1.5 OHMS	
LOCATION CITY, STATE IDAHO		Emitter Sites (Phase 2)	
BRADLEY ENGINEERING CHTD.			



## SITE BC

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## GROUND TEST REPORT

SITE: Enhanced Training in Idaho: Site 8C DATE: 1-7-93

Attach map of sites \_\_\_\_\_ TIME: 8:00 a.m.

LATITUDE: 41 25 00 \_\_\_\_\_ (if available)

LONGITUDE: 115 29 36 \_\_\_\_\_ (if available)

### THOSE CONDUCTING TESTS:

\_\_\_\_\_John Wanstrom\_\_\_\_\_

\_\_\_\_\_David Hammond\_\_\_\_\_

OTHERS: \_\_\_\_\_

### TEST CONDITIONS - SOIL OBSERVATIONS - DESCRIBE:

Dry \_\_\_\_\_

Rock \_\_\_\_\_

Other: Frozen soil \_\_\_\_\_

### TEST LAYOUT:

Attach test site plan \_\_\_\_\_

Approximate compass reading \_\_\_\_\_

## SOIL RESISTIVITY TEST

### Test Evaluation:

It is in range of 8000 ohms/cm to 12,000 ohms/cm, no further testing required.

If higher range - test 3 and 4.

### Calculation:

$P = 191.5 \text{ AR ohm/cm}$

P = Soil resistivity (ohm-cm)

A = Distance in feet

R = Resistance in ohms from scale

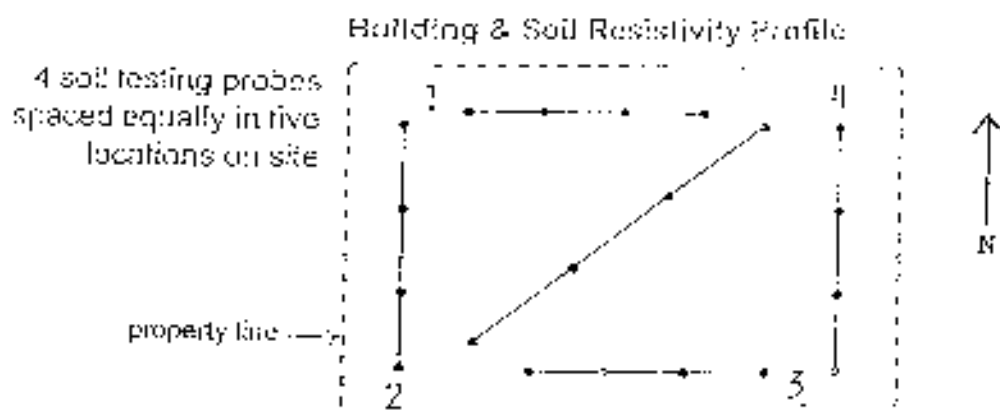


Lyncole KIT Grounding  
 3547 Voyager St., #104  
 Torrance, CA 90503  
 (310) 214-4700  
 FAX (310) 214-1314  
 (800) 982-2450

Site BC

# Soil Resistivity Testing

## 4 Point Method



Date 1-7-99

Conditions Frozen

### Readings

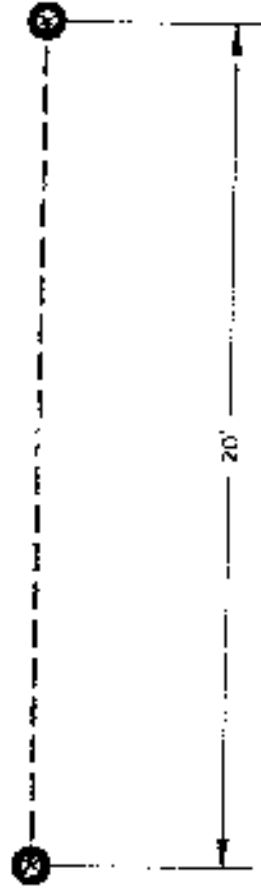
#### (SPACING)

Location	5'	10'	20'	30'	40'	Comments
1	17.0	9.7	3.2	2.8	2.8	
2	13.2	10.3	6.4	5.4	5.0	
3	30.6	27.9	10.5	7.9	5.2	
4	23.9	8.2	3.2	2.2	2.0	
5	18.5	4.9	2.9	2.6	2.4	

# NOTES:

- BAKE 4/0 ANG. COPPER CONDUCTOR BUNDLED  
30" BELOW GRADE OR 6" BELOW FROST LINE
- ALL BENDS IN GROUND CONDUCTOR TO BE MADE  
WITH MIN. 12" RADIUS

K2 100S



**LYNCOLE**

**TECHNICAL SERVICES**  
3547 VANDER STREET, SUITE 104  
TERRANCE, CA 90503  
(800)962-2610

SOIL DATA PROVIDED BY

BRADLEY ENGINEERING CHTD.

CLIENT / END USER BRADLEY ENGINEERING CHTD./U.S. AIR FORCE	
FIGURE PROJECT NAME 16	EMITTER SITES (PHASE 2)
TITLE GROUNDING OPTION	
LOCATION: CITY, STATE IDAHO	CALCULATED RESISTANCE ≤ 15 OHMS
DRAWN BY MRA	APPROVED BY DATE 01/21/99
REFERENCE NUMBER BC	SCALE NONE
ITS NUMBER 99028	

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## GROUND TEST REPORT

SITE: Enhanced Training in Idaho: Site 30 DATE: 11-24-98

Attach map of sites \_\_\_\_\_ TIME: 10:00 A.M.

LATITUDE: \_\_\_\_\_ (if available)

LONGITUDE: \_\_\_\_\_ (if available)

### THOSE CONDUCTING TESTS:

\_\_\_\_\_John Wanstrom\_\_\_\_\_

\_\_\_\_\_David Hammond\_\_\_\_\_

OTHERS: \_\_\_\_\_

### TEST CONDITIONS - SOIL OBSERVATIONS - DESCRIBE:

Dry \_\_\_\_\_

Rock Partial \_\_\_\_\_

Other Snow and Moist Soil \_\_\_\_\_

### TEST LAYOUT:

Attach test site plan \_\_\_\_\_

Approximate compass reading \_\_\_\_\_

## SOIL RESISTIVITY TEST

### Test Evaluation:

If in range of 8000 ohms/cm to 12,000 ohms/cm, no further testing required.

If higher range test 3 and 4.

### Calculation:

$P = 191.5 AR$  ohm/cm

P = Soil resistivity (ohm/cm)

A = Distance in feet

R = Resistance in ohms from scale

**LYNCOLE**

XIT GROUNDING

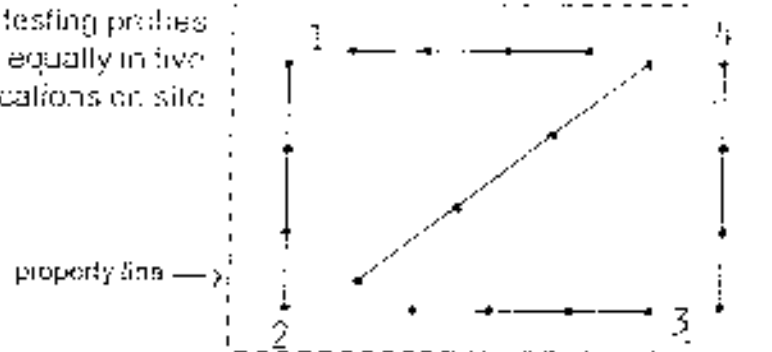
LYNCOLE XIT Grounding  
 3547 Maywood St., #104  
 Lawrence, CA 96053  
 (510) 214-4000  
 FAX (510) 214-1114  
 (900) 402-2434

# Soil Resistivity Testing

## 4 Point Method

Building &amp; Soil Resistivity Profile

4 soil testing probes  
 spaced equally in five  
 locations on site

Date 11-24-98Conditions Cold; Partly Cloudy; Windy

### Readings

(SPACING)

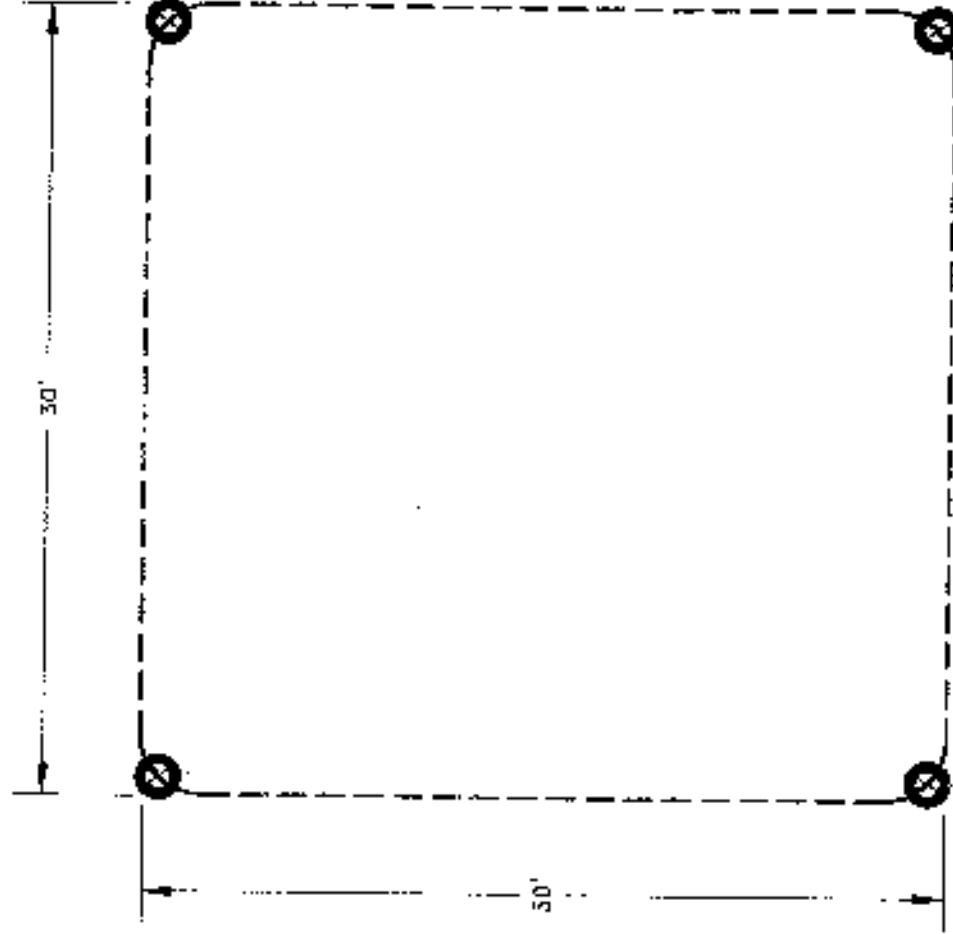
Location	5'	10'	20'	30'	40'	Comments
1	28.3	14.9	5.6	3.6	2.6	
2	10.1	9.6	4.7	3.5	2.9	
3	31.2	26.3	5.7	4.4	2.8	
4	54.2	32.3	12.3	8.0	3.4	
5	27.1	15.3	8.1	5.0	3.0	

# NOTES:

--- BARE 4/0 AWG. COPPER CONDUCTOR BURIED  
30" BELOW GRADE OR 6" BELOW FROST LINE

ALL BENDS IN GROUND CONDUCTOR TO BE 4" O.D.  
WITH MIN 12" RADIUS

K2-100S



TECHNICAL SERVICES

3547 VOYAGER STREET, SUITE 104

TERRANCE, CA 94503

(925) 962-2610

CLIENT / END USER BRADLEY ENGINEERING CHTD./U.S. AIR FORCE	
FILE NO. 17	PROJECT NAME EMITTER SITES (PHASE 2)
TITLE GROUNDING OPTION	
LOCATION CITY, STATE IDAHO	CALCULATED RESISTANCE < 15 OHMS
DRAWN BY MRA	APPROVED BY DATE 01/20/99
REFERENCE NUMBER 80	SCALE NONE
LIS NUMBER B9028	

SOIL DATA PROVIDED BY  
BRADLEY ENGINEERING CHTD.

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## GROUND TEST REPORT

SITE: Enhanced Training of Idaho; Site BE DATE: 12-3-98

Attach map of sites TIME: 11:20 A.M.

LATITUDE: \_\_\_\_\_ (if available)

LONGITUDE: \_\_\_\_\_ (if available)

### THOSE CONDUCTING TESTS:

\_\_\_\_\_ David Hammond

\_\_\_\_\_ John Wanstrom

OTHERS: \_\_\_\_\_

### TEST CONDITIONS - SOIL OBSERVATIONS - DESCRIBE:

Dry    Damp/Snow   

Rock   

Other   

### TEST LAYOUT:

Attach test site plan \_\_\_\_\_

Approximate compass reading \_\_\_\_\_

## SOIL RESISTIVITY TEST

### Test Evaluation:

If in range of 8000 ohms/cm to 12,000 ohms/cm, no further testing required.

If higher range - test 3 and 4.

### Calculation:

$\rho = 191.5 AR$  ohm/cm

$\rho$  = Soil resistivity (ohm/cm)

A = Distance in feet

R = Resistance in ohms from scale



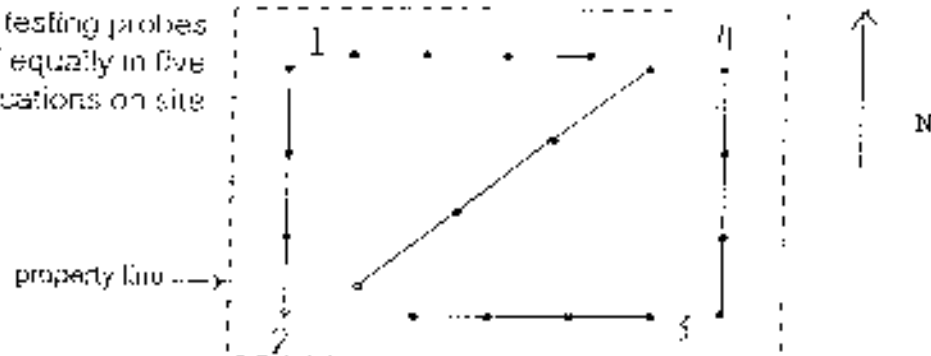
LYNCOE SITE GRADING  
 2547 Voyager St., #104  
 Lawrence, CA 94551  
 (916) 214-4070  
 FAX (916) 214-1114  
 (916) 662-2610

# Soil Resistivity Testing

## 4 Point Method

Building & Soil Resistivity Profile

4 soil testing probes spaced equally in five locations on site



Date 12-3-98

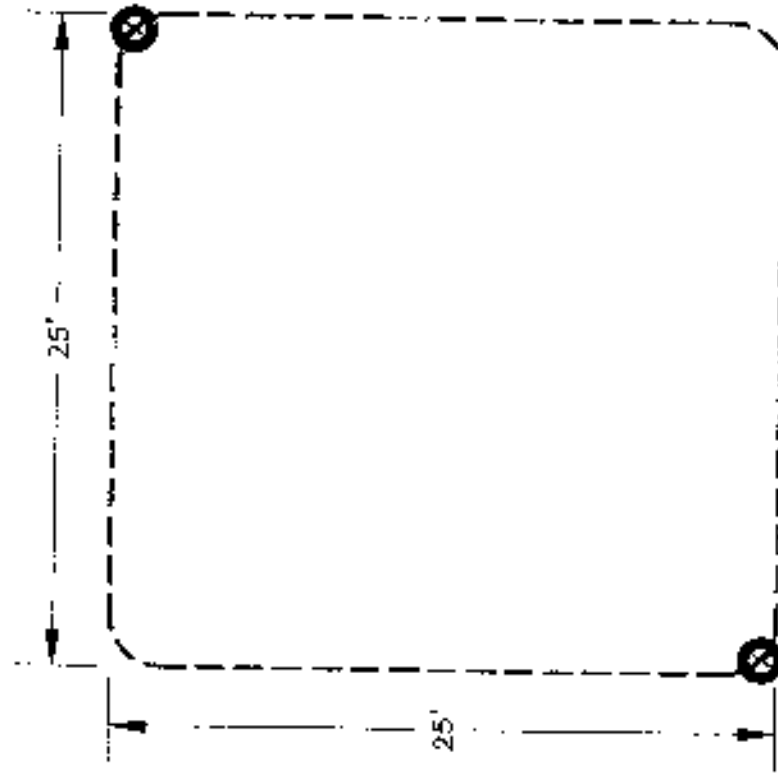
Conditions \_\_\_\_\_

### Readings

(SPACING)

Location	5'	10'	20'	30'	40'	Comments
1	8.2	5.0	2.2	1.4	1.2	
2	11.4	10.2	7.5	6.7	3.9	
3	40.9	29.4	13.3	8.4	6.7	
4	2.8	1.7	1.1	3.2	3.8	
5	16.9	9.1	4.4	3.5	4.3	






# NOTES:

---  
BARE 4/0 AWG. COPPER CONDUCTOR BURIED  
30" BELOW GRADE OR 6' BELOW FROST LINE

ALL BENDS IN GROUND CONDUCTOR TO BE MADE  
WITH MIN. 12" RADIUS

K2-100's



<b>LYNCOLE</b> TECHNICAL SERVICES 3547 VOYAGER STREET, SUITE 104 TERRANCE, CA 90503 (800)962-2610		CLIENT / END USER BRADLEY ENGINEERING CHTD./U.S. AIR FORCE	
SOIL DATA PROVIDED BY BRADLEY ENGINEERING CHTD.		STUDY PROJECT NAME 1.5 EMITTER SITES (PHASE 2)	
TITLE GROUNDING OPTION		LOCATION CITY, STATE IDAHO	
DRAWN BY MIRA		CALCULATED RESISTANCE < 15 OHMS	
APPROVED BY 		DATE 01/20/99	
REFERENCE NUMBER BE		SCALE NONE	
LIT. NUMBER 99028			

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## GROUND TEST REPORT

SITE: Enhanced Training in Idaho: Site BF DATE: 1-8-99

Attach map of sites \_\_\_\_\_ TIME: 10:00 a.m.

LATITUDE: 42 38 24 \_\_\_\_\_ (if available)  
reading at site

LONGITUDE: 115 44 43 (?) (115 46 39) \_\_\_\_\_ (if available)

### THOSE CONDUCTING TESTS:

\_\_\_\_\_John Wanstrom\_\_\_\_\_

\_\_\_\_\_David Hammond\_\_\_\_\_

OTHERS: \_\_\_\_\_

### TEST CONDITIONS - SOIL OBSERVATIONS - DESCRIBE:

Dry \_\_\_\_\_ XXX \_\_\_\_\_

Rock \_\_\_\_\_

Other \_\_\_\_\_ Frozen \_\_\_\_\_

### TEST LAYOUT:

Attach test site plan \_\_\_\_\_

Approximate compass reading \_\_\_\_\_

## SOIL RESISTIVITY TEST

### Test Evaluation:

If in range of 8000 ohms/cm to 12,000 ohms/cm, no further testing required.

If higher range - test 3 and 4.

### Calculation:

P = 191.5 AR ohm/cm

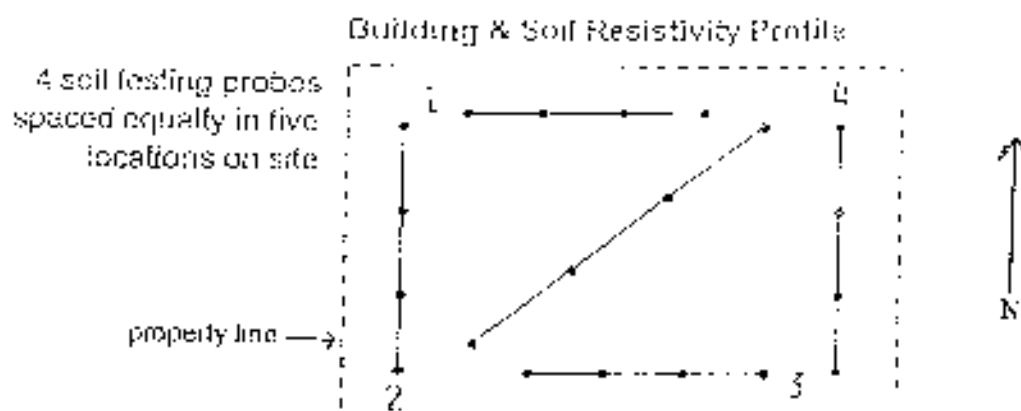
P = Soil resistivity (ohm/cm)

A = Distance in feet

R = Resistance in ohms from scale

# Soil Resistivity Testing

## 4 Point Method



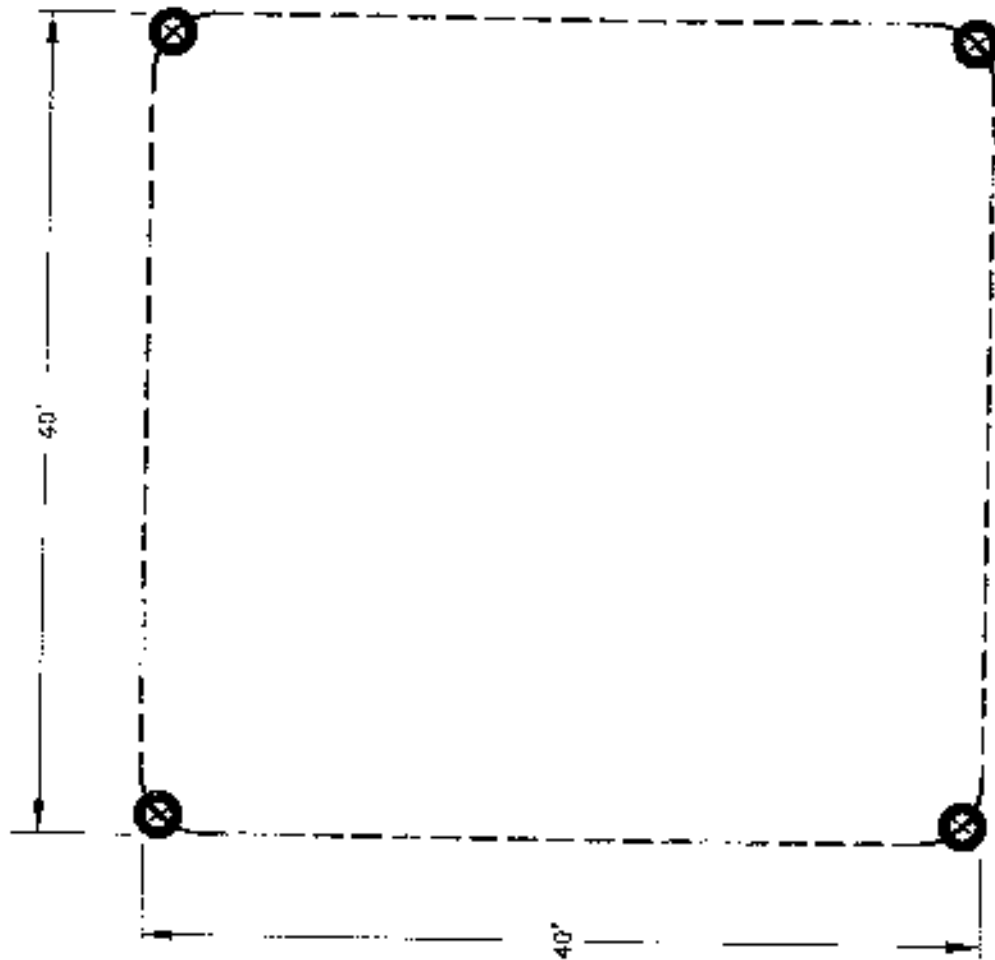
Date 1-8-99

Conditions Cold, dry, frozen ground

### Readings

(SPACING)

Location	5'	10'	20'	30'	40'	Comments
1	55.0	20.5	3.5	1.3	.7	
2	95.8	37.8	9.4	3.0	1.5	
3	58.9	36.8	7.5	2.3	1.1	
4	12.0	8.0	3.0	2.0	1.1	
5	99.2	31.3	6.7	3.0	1.2	



# NOTES:

- BASE 4/0 AWG. COPPER CONDUCTOR BURIED 30" BELOW GRADE OR 6" BELOW FROST LINE
- ALL ENDS IN GROUND CONDUCTOR TO BE MADE WITH MIN. 12" RADIUS

42-1001

**LYNCOLE**

TECHNICAL SERVICES  
3547 VOYAGER STREET, SUITE 104  
Torrance, CA. 90503  
(800)362-2610

SOIL DATA PROVIDED BY  
BRADLEY ENGINEERING CHTD.

CLIENT / END USER BRADLEY ENGINEERING CHTD./U.S.AIR FORCE	
FIGURE 18	PROJECT NAME EMITTER SITES (PHASE 2)
TITLE GROUNDING OPTION	
LOCATION: CITY, STATE IDAHO	CALCULATED RESISTANCE < 15 OHMS
DRAWN BY MRA	APPROVED BY DATE 01/20/98
REFERENCE NUMBER BF	SCALE NONE
LTS NUMBER 89028	

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## GROUND TEST REPORT

SITE: Enhanced Training in Idaho; Site BG DATE: 11-24-98

Attach map of sites TIME: 5:22

LATITUDE: \_\_\_\_\_ (if available)

LONGITUDE: \_\_\_\_\_ (if available)

THOSE CONDUCTING TESTS:

\_\_\_\_\_  
John Wanstrom

\_\_\_\_\_  
David Hammond

OTHERS:

TEST CONDITIONS - SOIL OBSERVATIONS - DESCRIBE:

Dry \_\_\_\_\_  
Rock Partial to Very \_\_\_\_\_  
Other YAC \_\_\_\_\_

**TEST LAYOUT:**

Attach test site plan \_\_\_\_\_  
Approximate compass reading \_\_\_\_\_

### SOIL RESISTIVITY TEST

### Test Evaluation:

† In range of 8000 ohms/cm to 12,000 ohms/cm, no further testing required.

If higher range - test 3 and 4.

Calculation:

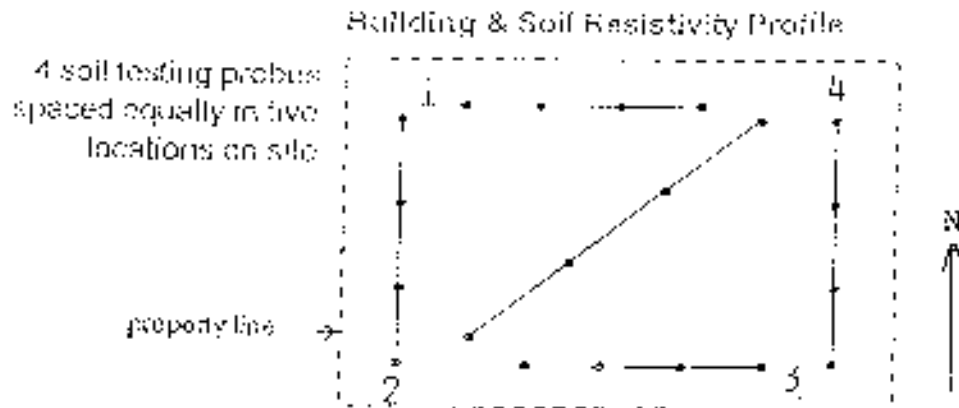
P = 191.5 AR ohm/cm  
P = Soil resistivity (ohm cm)  
A = Distance in feet  
R = Resistance in ohms from scale



Lyncole XET Grounding  
 3547 Mayfield St. #102  
 Torrance, CA 90503  
 (415) 214-4000  
 FAX (415) 214-4134  
 (800) 362-2010

# Soil Resistivity Testing

## 4 Point Method



Date 11-24-98

Conditions

### Readings

(SPACING)

location	5'	10'	20'	30'	40'	Comments
1	30.4	30.8	19.7	13.3	10.2	
2	37.9	17.9	12.6	10.6	9.1	
3	46.6	31.1	18.2	10.5	10.4	
4	17.7	10.0	10.1	9.1	7.6	
5	19.8	22.2	13.8	10.7	9.2	

**Mountain Home ETI**  
**Road B1, New and Improvement**

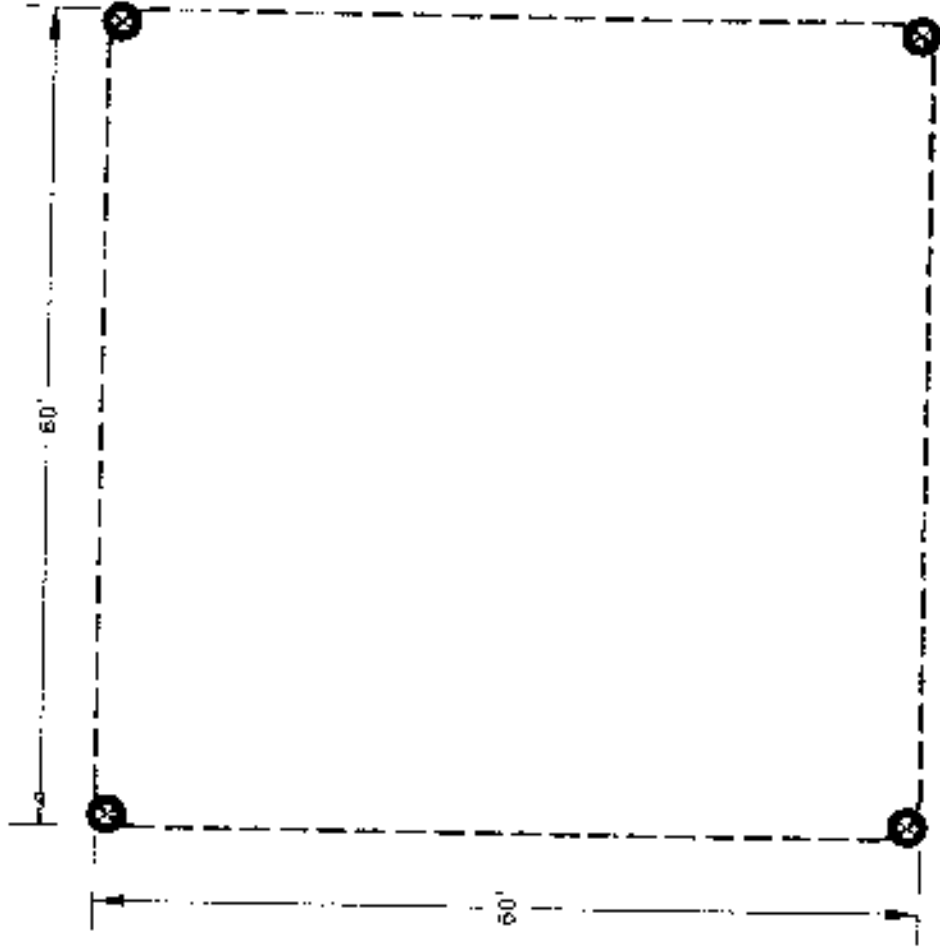
**Site B1**  
**4.01 Acres±**

and the intersection with the new road to site ND-5, said terminus point bears South 64°32'59" East, a distance of 2,339.19 feet from said west quarter-section corner of Section 23. The sidelines of said strip of land are to be extended or shortened to begin on the northwesterly line of Site B1.

Contains 4.01 acres, more or less.

Bearings of this description are based on True North. This Description is based on a survey map by Bureau of Land Management, dated 2 Aug 99, Drawing No. B1.

By: RFG 13 Aug 99  
Chkd: SDM 13 Aug 99  
Map: SE-RE-  
Cadd: mc/mh/rc/pc/eti/access B1.dgn  
Rcvsd:  
Doc 001491.doc



**NOTES:**

- BARE 4/0 AWG COPPER CONDUCTOR BURIED 30" BELOW GRADE OR 5" BELOW FIRST LINE
- ⊗ ALL BENDS IN GROUND CONDUCTOR TO BE MADE WITH MIN. 12" RADIUS
- ⊗ K2-100'S

<b>LYNCOLE</b> TECHNICAL SERVICES 3547 VOYAGER STREET, SUITE 104 TORRANCE, CA. 90503 (310) 562-2610		CLIENT / END USER	
		BRADLEY ENGINEERING CHTD./U.S.AIR FORCE	
FIDURS		PROJECT NAME	EMITTER SITES (PHASE 2)
20			
TITLE			
GROUNDING OPTION			
LOCATION CITY, STATE		CALCULATED RESISTANCE	
IDAHO		< 1.5 OHMS	
DESIGN BY	APPROVED BY	DATE	
MRA	<i>[Signature]</i>	01/20/99	
REFERENCE NUMBER		SCHEM	LIS NUMBER
90		NONE	98028
SOIL DATA PROVIDED BY BRADLEY ENGINEERING CHTD.			

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SITE B1



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## GROUND TEST REPORT

SITE: Enhanced Training in Idaho: Site B1 DATE: 1-7-99

Attach map of sites \_\_\_\_\_ TIME: 3:30 p.m.

LATITUDE: 42 27 .1 \_\_\_\_\_ (if available)

LONGITUDE: 115 57 41 \_\_\_\_\_ (if available)

### THOSE CONDUCTING TESTS:

John Wanstrom  
David Hammond

OTHERS: \_\_\_\_\_

### TEST CONDITIONS - SOIL OBSERVATIONS - DESCRIBE:

~~Moist~~ Moist  
Rock Very rocky  
Other Partially frozen

### TEST LAYOUT:

Attach test site plan \_\_\_\_\_  
Approximate compass reading \_\_\_\_\_

## SOIL RESISTIVITY TEST

### Test Evaluation:

If in range of 8000 ohms/cm to 12,000 ohms/cm, no further testing required.

If higher range test 3 and 4.

### Calculation:

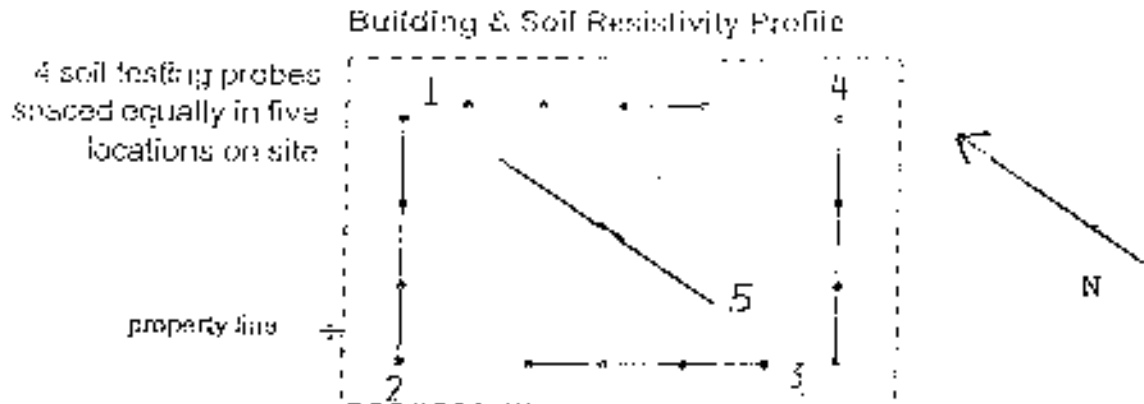
$P = 191.5 \text{ AH ohm/cm}$   
 $P$  = Soil resistivity (ohm cm)  
 $A$  = Distance in feet  
 $R$  = Resistance in ohms from scale



Lyncole XIT Grounding  
 3547 Voyager St., #104  
 Torrance, CA 90503  
 (310) 214-4700  
 FAX (310) 214-1134  
 (800) 963-2610

# Soil Resistivity Testing

## 4 Point Method



Date 1-7-99

Conditions Rocky and moist

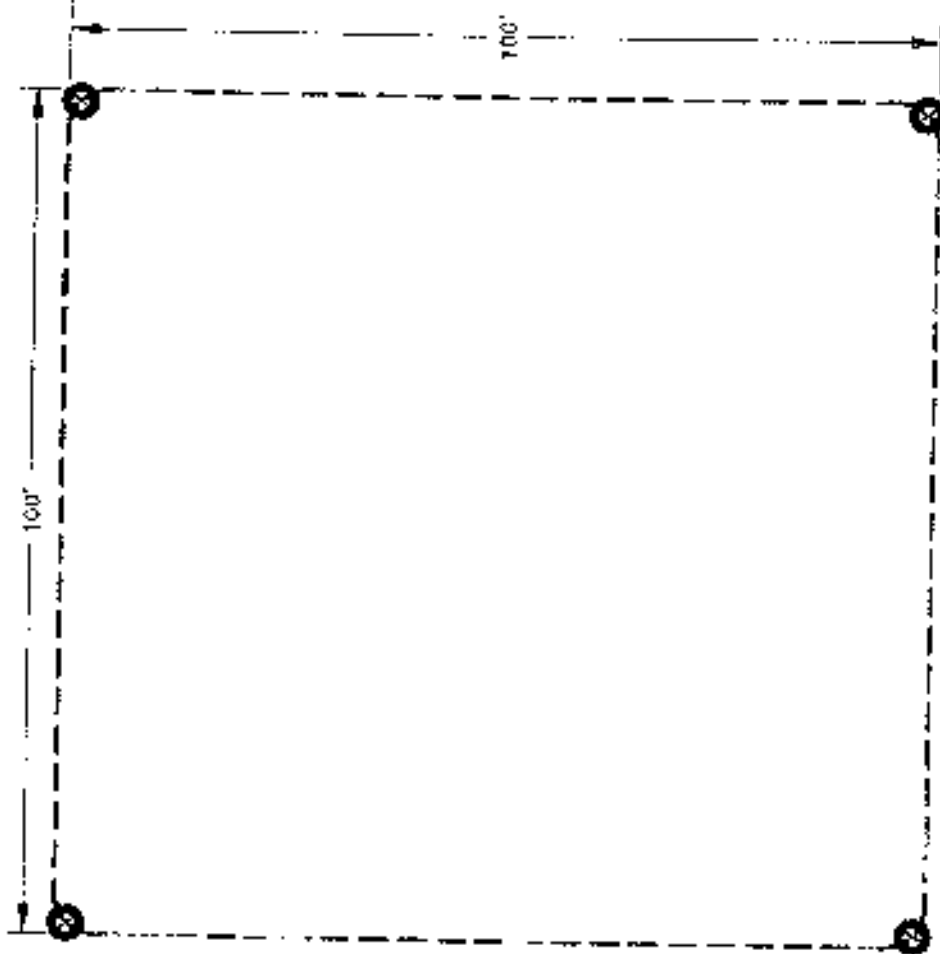
### Readings

(SPACING)

location	5'	10'	20'	30'	40'	Comments
1	35.8	25.7	15.2	11.6	10.0	
2	71.0	50.5	21.4	13.9	11.7	
3	47.8	29.7	16.6	12.2	10.0	
4	47.8	33.4	21.8	15.5	12.5	
5	43.7	44.2	20.0	15.6	12.0	

**NOTES:**

- BARE 4/0 AVE. COPPER CONDUCTOR BARETD
- 30' BELOW GRADE OR 6' BELOW FREST LINE
- ALL BENDS IN GROUND CONDUCTOR TO BE MADE WITH MIN. 18" RADIUS
- K2-100S



<b>LYNCOLE</b> TECHNICAL SERVICES 3547 VOYAGER STREET, SUITE 104 TORRANCE, CA 90503 (800)562-2610		CLIENT / END USER BRADLEY ENGINEERING CHTD./U.S.AIR FORCE	
STILL DATA PROVIDED BY BRADLEY ENGINEERING CHTD.		FIGURE 21	PROJECT NAME EMITTER SITES (PHASE 2)
TITLE GROUNDING OPTION		LOCATION CITY, STATE IDAHO	CALCULATED RESISTANCE < 15 OHMS
DRAWN BY MRA	APPROVED BY <i>[Signature]</i>	DATE 01/21/99	SCALE NONE
REFERENCE NUMBER B1		LTS NUMBER B9025	

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SITE BJ

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# GROUND TEST REPORT

SITE: Enhanced Training of Idaho; Site BJ DATE: 12-3-98

Attach map of sites

TIME: \_\_\_\_\_

LATITUDE: \_\_\_\_\_ (if available)

LONGITUDE: \_\_\_\_\_ (if available)

THOSE CONDUCTING TESTS:

\_\_\_\_\_  
\_\_\_\_\_ David Hammond \_\_\_\_\_  
\_\_\_\_\_ John Wanstrom \_\_\_\_\_

OTHERS: \_\_\_\_\_

TEST CONDITIONS - SOIL OBSERVATIONS - DESCRIBE:

Dry Moist/Mod. \_\_\_\_\_  
Rock \_\_\_\_\_  
Other \_\_\_\_\_

**TEST LAYOUT:**

Attach test site plan \_\_\_\_\_  
Approximate compass reading \_\_\_\_\_

## SOIL RESISTIVITY TEST

### Test Evaluation:

If in range of 8000 ohms/cm to 12,000 ohms/cm, no further testing required.

If higher range - test 3 and 4

Calculation:

P = 191.5 AR ohm/cm  
P = Soil resistivity (ohm cm)  
A = Distance in feet  
R = Resistance in ohms from scale

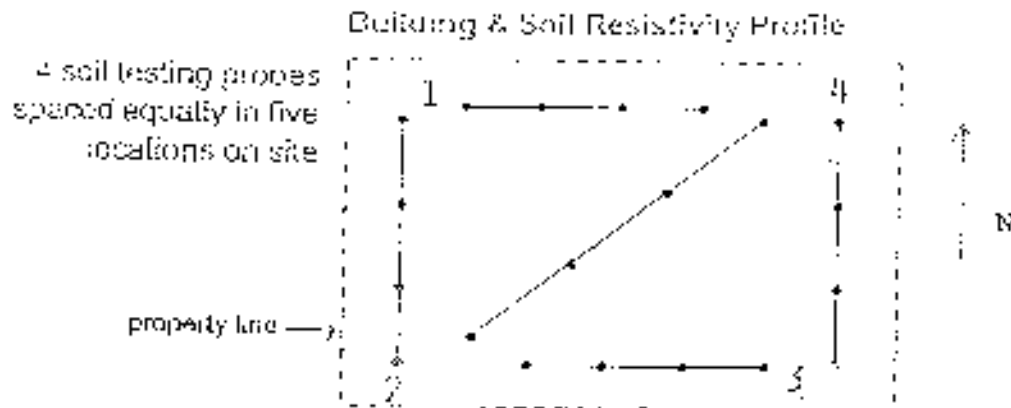




LYNCOLE XIT GROUTING  
 3547 Myager St., #104  
 Torrance, CA 90503  
 (310) 214-4030  
 FAX (310) 214-4114  
 (800) 902-3510

# Soil Resistivity Testing

## 4 Point Method



Date 12-3-98

Conditions \_\_\_\_\_

Readings

(SPACING)

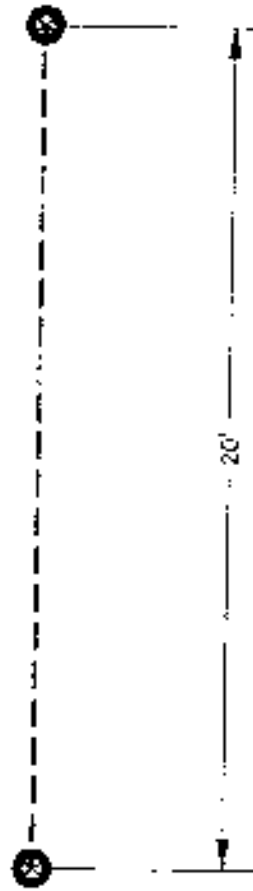
Location	5'	10'	20'	30'	40'	Comments
1	3.2	3.1	3.2	2.3	2.2	
2	4.2	3.8	2.8	2.3	2.0	
3	3.5	2.8	1.5	1.3	1.1	
4	3.2	2.7	1.5	1.4	1.4	
5	3.8	3.2	1.5	1.3	1.2	

# NOTES:

--- BARE 4/0 AWG. COPPER CONDUCTOR BURRED  
30" BELOW GRADE OR 6" BELOW FROST LINE

ALL BENDS IN GROUND CONDUCTOR TO BE MADE  
WITH MIN. 12" RADIUS

<2 LOS



<b>LYNCOLE</b> TECHNICAL SERVICES 3547 VOVAGER STREET, SUITE 104 TORRANCE, CA. 90503 (800)962-2610		CLIENT / JOB USER BRADLEY ENGINEERING CHTD./U.S.AIR FORCE	
STUDY PROJECT NAME 22		Emitter Sites (Phase 2)	
TITLE GROUNDING OPTION		LOCATION CITY, STATE IDAHO	
LOCATION CITY, STATE IDAHO		CALCULATED RESISTANCE < 10 OHMS	
DRAWN BY MRA	APPROVED BY DATE <i>[Signature]</i> 01/20/99	REFERENCE NUMBER BJ	
SOL. DATA PROVIDED BY BRADLEY ENGINEERING CHTD.		SCALE NONE	LITS NUMBER 98023

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# GROUND TEST REPORT

SITE: Enhanced Training of Idaho State BK DATE: 12-9-98

Attach map of sites TIME: 2:45 P.M.

LATITUDE: 42.71657 (if available)

LONGITUDE: -115.05847 \_\_\_\_\_ (if available)

THOSE CONDUCTING TESTS:

John Wanstrom

**OTHERS:**

TEST CONDITIONS - SOIL OBSERVATIONS - DESCRIBE:

Dry \_\_\_\_\_  
Rock \_\_\_\_\_  
Other: 1" Snow \_\_\_\_\_

**TEST LAYOUT:**

Attach test site plan \_\_\_\_\_  
Approximate compass reading \_\_\_\_\_

### SOIL RESISTIVITY TEST

### Test Evaluation:

If in range of 8000 ohms/ohm to 12,000 ohms/ohm, no further testing required.

If higher range - tes! 3 and 4.

**Calculation:**

P = 191.5 AR ohm/cm  
P = Soil resistivity (ohm-cm)  
A = Distance in feet  
R = Resistance in ohms from scale



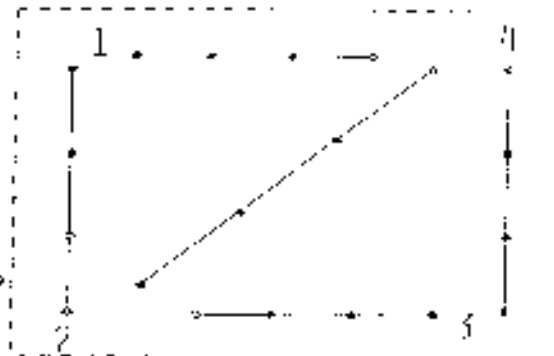
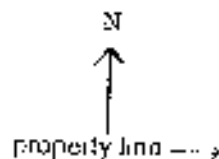
Lynrole XIT Grounding  
 3547 Voyager St., #104  
 Torrance, CA 90503  
 (310) 214-4000  
 FAX (310) 214-1114  
 (800) 944-2518

# Soil Resistivity Testing

## 4 Point Method

Building & Soil Resistivity Profile

4 soil testing probes  
 spaced equally in five  
 locations on site



Date 12-9-98

Conditions 1" Snow; Damp Soil

### Readings

(SPACING)

Location	5'	10'	20'	30'	40'	Comments
1	5.2	1.2	.7	.3	.2	
2	4.2	1.4	.6	.3	.2	
3	7.4	2.2	.6	.4	.3	
4	8.2	1.6	.5	.4	.2	
5	4.2	1.8	.8	.4	.2	

# NOTES:

BARE 4/0 AWG. COPPER CONDUCTOR BURIED  
30" BELOW GRADE OR 6" BELOW FIRST LINE

ALL PINS IN GROUND CONDUCTOR TO BE MADE  
WITH MIN. 1/2" RADIUS

K2-10CS



<b>LYNCOLE</b>		CLIENT / END USER BRADLEY ENGINEERING CMTD./U.S. AIR FORCE	
TECHNICAL SERVICES		FIGURE 4	PROJECT NAME EMITTER SITES (PHASE 2)
3547 VINYARD STREET, SUITE 304 TERRANCE, CA 90503 (800)563-2610		TITLE GROUNDING OPTION	
SITE DATA PROVIDED BY BRADLEY ENGINEERING CMTD.		LOCATION CITY, STATE IDAHO	CALCULATED RESISTANCE < 14 OHMS
APPROVED BY DATE 01/21/99		DESIGN BY MRA	REVISION NUMBER NONE
APPROVED BY DATE		REVISION NUMBER NONE	REVISION NUMBER 88020



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**APPENDIX C**

**LYNCOLE XIT**  
**GROUNDING**  
**INFORMATION**

**COSTS**

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LYNCOLE XIT GROUNDING

LYNCOLE XIT GROUNDING  
 8547 Voyager Blvd. #104  
 Torrance, California 90503

tel (310) 514-4000  
 fax (310) 582-9410  
 Email: lynch@xitgrounding.com  
 www.xitgrounding.com

BRADLEY ENGINEERING CHTD.  
 Bruce Bradley

Date: 1/25/99

RE: Grounding Options -

EMITTER SITES (PHASE 2)

Sites #: AA - BK (Total 26)

Address: IDAHO  
 U. S. AIR FORCE

Project #: 99028

Acct Mgr: Scott Gill Curry

Engineer: Mohammed Aziz

These options are conservative calculations of the grounding system, based on testing data provided by: Bradley Engineering Chtd. These designs will provide a stable, low resistance system that will be insusceptible to environmental variables, such as changes in temperature and precipitation, and may improve with time. The grounding recommendations for each site are listed on page 2 and 3.

The soil resistivity data varies a lot along the five directions tested. The readings might have effected by the snow (present on the ground), since the readings at each depth appeared to be considerably different from each other. Therefore, this situation limits the accuracy of the soil configuration.

SITE NUMBER	NUMBER OF XIT SYSTEMS	XIT MODEL	TYPE AND SIZE OF GRID	PLACEMENT OF ELECTRODES	CALCULATED EARTH RESISTANCE
AA	2	K2-10CS	Counterpoise 20' X 20'	As Illustrated Figure (1)	< 15 ohms
AB	2	K2-10CS	Counterpoise 20' X 20'	As Illustrated Figure (2)	< 12 ohms
AC	2	K2-10CS	Counterpoise 20' X 20'	As Illustrated Figure (3)	< 15 ohms

SITE NUMBER	NUMBER OF XIT SYSTEMS	XIT MODEL	TYPE AND SIZE OF GRID	PLACEMENT OF ELECTRODES	CALCULATED EARTH RESISTANCE
AE	2	K2-10CS	20' apart connected by buried conductor	As Illustrated Figure (4)	< 14 ohms
AF	2	K2-10CS	Counterpoise 30' X 30'	As Illustrated Figure (5)	< 15 ohms
AG	4	K2-10CS	Counterpoise 120' X 120'	As Illustrated Figure (6)	< 15 ohms
AG?	2	K2-10CS	20' apart connected by buried conductor	As Illustrated Figure (7)	< 12 ohms
AH	1	K2-10CS	Single Point Ground	As Per Customer	< 15 ohms
AI	2	K2-10CS	20' apart connected by buried conductor	As Illustrated Figure (8)	< 10 ohms
AJ	2	K2-10CS	Counterpoise 25' X 25'	As Illustrated Figure (9)	< 15 ohms
AK	2	K2-10CS	Counterpoise 30' X 30'	As Illustrated Figure (10)	< 15 ohms
AM	2	K2-10CS	Counterpoise 50' X 50'	As Illustrated Figure (11)	< 15 ohms
AT	2	K2-10CS	Counterpoise 30' X 30'	As Illustrated Figure (12)	< 15 ohms
AU	2	K2-10CS	Counterpoise 20' X 20'	As Illustrated Figure (13)	< 13 ohms
AV	1	K2-10CS	Single Point Ground	As Per Customer	< 10 ohms

SITE NUMBER	NUMBER OF XIT SYSTEMS	XIT MODEL	TYPE AND SIZE OF GRID	PLACEMENT OF ELECTRODES	CALCULATED EARTH RESISTANCE
BA	2	K2-10CS	Counterpoise 20' X 20'	As Illustrated Figure (14)	< 13 ohms
BB	2	K2-10CS	Counterpoise 20' X 20'	As Illustrated Figure (15)	< 13 ohms
BC	2	K2-10CS	20' apart connected by buried conductor	As Illustrated Figure (16)	< 15 ohms
BD	2	K2-10CS	Counterpoise 30' X 30'	As Illustrated Figure (17)	< 15 ohms
BE	2	K2-10CS	Counterpoise 25' X 25'	As Illustrated Figure (18)	< 15 ohms
BF	4	K2-10CS	Counterpoise 40' X 40'	As Illustrated Figure (19)	< 15 ohms
BG	4	K2-10CS	Counterpoise 60' X 60'	As Illustrated Figure (20)	< 15 ohms
BI	4	K2-10CS	Counterpoise 100' X 100'	As Illustrated Figure (21)	< 15 ohms
BJ	2	K2-10CS	20' apart connected by buried conductor	As Illustrated Figure (22)	< 10 ohms
BK	1	K2-10CS	Single Point Ground	As Per Customer	< 10 ohms
<b>Alternate Grounding Option</b>					
BF	1	K2-20CS	Single Point Ground	As Per Customer	< 12 ohms



A Division of Lynco Industries, Inc.

Lyndle XIT Grounding  
3547 Weyburn St. #104  
Irvine, California 92603

Tel (916) 214-4100  
(800) 962-2610  
Fax (916) 214-1114  
support@lyncole.com  
www.lyncole.com

January 27, 1999

Bruce Bradley  
Dir. of Engineering  
Bradley Engineer CHTD  
382 Walnut  
Idaho Falls, ID 83402

RE: Requested Price Quotation - Lyncole XIT Ground System, Model K2-10cs

Dear Mr. Bradley,

Lyncole is pleased to provide you with the following quote:

(55) K2-10CS XIT Grounding Systems..... @ \$ 650.00 ea.

Each system includes:

- (1) 10 ft. Electrolytic rod with 24" 4/0 copper conductor Cadwelded
- (1) XB-11 Polyplastic cover box (Concrete Available)
- (1) 50lb. Lynconite backfill material

Total Materials Cost..... \$ 35,750.00

Shipping & Handling: FOB Torrance CA

Approximate Weight: 94 lbs each system (5170 lbs total)

Terms: Net 30 days

Late fees of 1 1/2% per month on balances unpaid after 30 days  
Prices on above quote good for 30 days.

The XIT™ Grounding System is completely maintenance-free for its service life of 30 years. Lynconite clay backfill (mixed with water to form a slurry) is poured around the rod to absorb and retain moisture, as well as extend the life of the system. These features make the XIT™ Grounding System the most reliable method of protecting personnel and expensive equipment.

If you have any questions or require additional information, please call me at (800)962-2610. I look forward to working with you.

Sincerely,

Scott Gill-Curry  
Senior Account Manager

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## APPENDIX F • ENVIRONMENTAL PERMIT MATRIX



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**MHAFB - ETI**  
**Environmental Permit Matrix**  
**June 11, 1999**

Permit	Name/Address	Contact	Process Time	Fee	Notes
Sewer Septic	1) Southwest District Health Dept. 820 Main Street Cockwell, Idaho 83605	Randy Grove (208) 455-5400	30 days	\$100/ Evaluation \$80/ Permit	
Encroachment Right-of-Way	2) Idaho Transportation Dept Dist. 41 8150 Chinden Boulevard Boise, Idaho 83714	Matt Ward (208) 334-8341	30 days	\$20-40/ Permit	
Encroachment Right-of-Way	2) Owyhee County Highway District 3 P.O. Box 602 Bruneau, Idaho 83804	Dave Miller (208) 845-2746	30 days	\$0.00	Maintains highways west of Bruneau River.
Encroachment Right-of-Way	4) Owyhee County Highway District 1 P.O. Box 128 Murphy, Idaho 83650	Larry McDaniel (208) 495-1170	30 days	\$0.00	Maintains highways east of Bruneau River.
Right-of-Way	5) Bureau of Land Management 3948 Development Avenue Boise, Idaho 83705	Del Bale (208) 384-3450		\$0.00	Reference Right-of-Way Reservation ID-32274, No special permit required.
Water	6) Idaho Dept. of Health and Welfare Division of Environmental Quality 1445 North Orchard Boise, Idaho 83708	Steve Ray (208) 373-0182	80 days	\$0.00	

## APPENDIX F • ENVIRONMENTAL PERMIT MATRIX

MHAFB - ETI  
Environmental Permit Matrix  
June 11, 1999

Permit	Name/Address	Contact	Process Time	Fee	Notes
Sewer Septic	1) Southwest District Health Dept. 920 Main Street Caldwell, Idaho 83605	Randy Grove (208) 455-5400	30 days	\$100/ Evaluation \$90/ Permit	
Encroachment Right-of-Way	2) Idaho Transportation Dept. Dist. III 8150 Chinden Boulevard Boise, Idaho 83714	Matt Ward (208) 334-8341	30 days	\$20-40/ Permit	
Encroachment Right-of-Way	3) Owyhee County Highway District 3 P.O. Box 602 Bruneau, Idaho 83604	Dave Miller (208) 845-2746	30 days	\$0.00	Maintains highways west of Bruneau River.
Encroachment Right-of-Way	4) Owyhee County Highway District 1 P.O. Box 128 Murphy, Idaho 83650	Larry McDaniel (208) 495-1170	30 days	\$0.00	Maintains highways east of Bruneau River.
Right-of-Way	5) Bureau of Land Management 3948 Development Avenue Boise, Idaho 83705	Del Bale (208) 384-3450		\$0.00	Reference Right-of-Way Reservation IDI-32274. No special permit required.
Water	6) Idaho Dept. of Health and Welfare Division of Environmental Quality 1445 North Orchard Boise, Idaho 83706	Steve Ray (208) 373-0162	60 days	\$0.00	

## APPENDIX G • DRAWINGS (ATTACHED SEPARATELY)

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# APPENDIX H • MITIGATION MEASURES FOR FACILITIES CONSTRUCTION: PHASE II AND III

**ENHANCED TRAINING IN IDAHO**

**MITIGATION MEASURES FOR FACILITIES  
CONSTRUCTION: PHASE II AND III**

**Prepared for Kleinfelder**

**by**

**DAMES & MOORE  
1750 Front Street  
Boise, Idaho 83702**

**November 3, 1999**



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Appendix 2. Slickspot Peppergrass (*Lepidium papilliferum*) Overview.

## INTRODUCTION

This mitigation plan was designed to be used in the bid process for the design/build portion of Enhanced Training in Idaho (ETI) facilities. This plan covers commitments outlined in the Final Environmental Impact Statement (FEIS) and Record of Decision (ROD) for ETI, and provides suggested mitigation measures to insure the commitments are upheld during the build phase of ETI. This plan addresses the following construction components of Phase II and Phase III (Table 1):

- X 14 1/4-acre emitter sites
- X 10 1-acre emitter sites
- X 3 no-drop sites
- X the maintenance complex
- X the industrial site
- X one SAM site

The mitigation plan primarily addresses biological resources. However, mitigation has been included for cultural resources in the event of unanticipated discovery of culturally sensitive sites during the building phase. The preferred alternative has been 100% surveyed and we understand that there were no known significant resources found (personal communication with Nathan Rowland). Therefore, the plan addresses cultural involvement only if unanticipated discovery is made during construction.

The plan includes mitigation measures such as on-site monitoring during construction where necessary and descriptions of seasonally restricted areas. We intended to map sensitive avoidance areas using sensitive resources data obtained through the Air Force; however, the resolution of these data were very coarse. Thus, accurate mapping of the sensitive sites was impossible. Fortunately, the Air Force chose sites to avoid cultural and biologically sensitive areas, and threatened and endangered species.

After the sites were visited, mitigation measures were examined to see if they could be effective in reducing either the intensity or duration of impacts. Mitigation for the proposed project included two types of programs: Generic and Selective. Generic mitigation consists of measures or techniques to which the contractor is committed to on a nonspecific, or project-wide basis as part of its proposed project plan. Generic mitigation measures are listed in Table 2. Selectively recommended mitigation measures, listed in Table 3, are measure(s) or techniques to which the contractor is committed to on a case-by-case (or "selective") basis after impacts were identified and assessed. Mitigation measures can be applied individually to impacts or can be combined with other mitigation measures.

## MITIGATION PLAN

Mitigation measures presented in the ETI EIS specifically address issues covering habitat preservation, protection of surface waters, measures to reduce fire risks, and construction measures to minimize wind or water erosion. The Air Force will continue to consult with the BLM to ensure ETI maintains consistency with the Interior Columbia basin efforts to the extent practicable while meeting primary mission needs. However, many of the measures outlined in the EIS and ROD are specific to construction of ETI facilities. It is imperative that the mitigation measures detailed in the EIS and ROD are followed during the construction phase.

Mitigation measures detailed in the EIS and ROD specific to biological resources center on habitat loss during construction, protecting rare plants, avoiding California bighorn sheep (*Ovis canadensis californiana*) critical lambing areas, and avoiding sage grouse (*Centrocercus urophasianus*) lekking and rearing areas. None of the sites covered under this plan contain threatened, or endangered species, or are critical California bighorn sheep lambing areas. However, some sites are adjacent to or contain sage grouse lekking grounds. In addition, some sites contain slick spot peppergrass (*Lepidium papilliferum*). Selective mitigation measures have been proposed for these areas.

Fortunately, the majority of sites were selected as to minimize impacts to biological resources. For example sites were selected in disturbed areas (burned with complete exotic species cover) with little biological value. However, the disturbed area is often within or adjacent to large continuous stands of sagebrush-steppe habitat. The actual site where building will occur may have little wildlife value, but the area around the site provides habitat for many plant and animal species. Therefore, mitigation measures focus on reducing disturbance of the adjacent habitat in most instances.

All sites covered under this plan have been surveyed for culture resources. Therefore, we assume that if unanticipated cultural discoveries are made during construction, construction activities would cease in the affected area and not resume until the contractor is contacted by the contracting officer. The contractor's representative would notify the Air Force environmental officer of the discovery. The Air Force official would then notify a qualified permitted archeologist for a consultation. If the site is significant, e.g., human burial site, the archeologist would contact the State Historical Preservation Office (SHPO) for further consultation. Any subsequent mitigation would be in accordance with the FEIS.

### Site Descriptions

The following are descriptions of Phase II and Phase III sites that exhibit characteristics that are biologically important -i.e., they contain special status species or are within or adjacent to large

continuous tracts of sagebrush steppe habitat. Selective mitigation measures are proposed for these sites in addition to the generic mitigation measures which cover all sites.

A photograph is provided for each site described below. The photographs were usually taken from the center of the site looking toward the adjacent sensitive habitat. These photos will allow the contractor to quickly identify the critical habitat at each site; thus, enabling him to take precautions to reduce impacts of these sensitive habitats.

*Phase II SAM Site and Industrial Complex.* The Phase II SAM and Industrial Complex are within the primary ordinance impact area. The EIS states that plants within this area would potentially be eliminated (p. 4-109). However, This area contains the largest concentrations of slick spot peppergrass and slick spot habitat (Photo 1) of all sites covered under this plan. The Air Force is required to, whenever possible, avoid slick spot peppergrass and slick spot habitat. Therefore the contractor will provide on-site monitoring of slick spot peppergrass and slick spot peppergrass habitat during construction; thus, insuring that the minimum amount of this rare plant's habitat is destroyed during construction at the maintenance complex, industrial complex, and Phase II SAM array.

*ND-7 and AG.* ND-7 (Photo 2) and AG occupy sparse big sage shrubland. The sites have an understory of planted exotic bunchgrass. However, the site is within two miles of a known sage grouse Lek. In addition, the site is adjacent to a large continuous patch of big sage which provides critical habitat to species such as sage grouse, mule deer, antelope, and various reptile species.

*AF.* The AF 1/4 emitter site is centered on a patch of exotic grasses and forbs (Photo 3). The site is adjacent to a large continuous patch of sagebrush steppe habitat. There are two sage grouse leks within 1.5 miles of AF.

*BC.* Site BC (Photo 4) is adjacent to a large continuous patch of sagebrush steppe habitat. Sage grouse used the habitat adjacent to BC during the year as evident from scat collected on 6/14/99. The contractor should strive to minimize the impacts to the shrub-steppe habitat at BC

*ND-4 and AV.* ND-4 and AV (Photos 5 and 6) will be the most difficult sites to mitigate the effects of building. There are three sage grouse leks on the site. The site is also used by wintering sage grouse. AV's cover is comprised of low shrubs (mostly sage). ND-4 is comprised of large sagebrush particularly in the southeast and southwest quarters of the site. Buildings on ND-4 should contain bird spikes to discourage raptors from using the facilities as sage grouse hunting perches. Facilities should also be moved out of the southeast and southwest quarters of the site. The contractor should strive to reduce impacts to native vegetation while building the ND-4 facilities.

*AI.* AI (Photo 7) is adjacent to a large area of continuous sage-steppe habitat. AI is also adjacent to a sage grouse lekking area. The contractor should strive to minimize the impacts to the sage habitat at AI.

*AQ.* AQ (Photo 8) is within a large area of continuous sage-steppe habitat. The site is also within three miles of a sage grouse lek. The contractor should strive to minimize the impacts to the sage habitat at AQ paying particular attention to fire. If a fire started at AQ, it would have the potential of burning a large patch of previously unburned shrub-steppe habitat.

*BA.* BA's cover (Photo 9) is comprised of exotic grass within a large continuous patch of sage-steppe habitat. As with AQ, the contractor should strive to minimize the impacts to the sage habitat at BA paying particular attention to fire. If a fire started at BA, it would have the potential of burning a large patch of previously unburned shrub-steppe habitat.

*BD.* BD (Photo 10) is an area of exotic grass within a large continuous patch of sage-steppe habitat. BD is also within three miles of four sage grouse leks. As with AQ, the contractor should strive to minimize the impacts to the sage habitat at BA paying particular attention to fire. A fire started at BA would have the potential of burning a large patch of previously unburned shrub-steppe habitat.

*BG.* BG (Photo 11) is within a large area of continuous sagebrush-steppe habitat. The contractor should strive to minimize the impacts to the sage habitat at BG, paying particular attention to fire. If a fire started at BG, it would have the potential of burning a large patch of previously unburned shrub-steppe habitat.

### **Suggested Mitigation for Phase II and Phase III Sites**

Table 1 lists each site with suggested mitigation measures for each site. Each site was visited and specific recommendations were developed to meet the criteria specified in the EIS and ROD. Table 3 describes the mitigation measures listed in Table 1.

**Table 1**  
**Specific Mitigation for Phase II and Phase III Sites Included in the Mitigation Plan**

SITE NAME	SITE TYPE	COMMENTS	SPECIFIC MITIGATION MEASURES
<b>PHASE II</b>			
Maintenance complex	Range maintenance facility	thick with planted crested wheatgrass	1
Industrial Complex	Drop site	numerous slick spots	1
SAM Array	Drop site	numerous slick spots	1
ND-7	No drop site	seeded with sparse shrub cover; adjacent to very large big sage patch	3
AE	1/4 acre emitter	entire site planted crested wheatgrass	NA
AF	1/4 acre emitter	site dominated by cheat grass, crested wheatgrass and tumble mustard	2
AG	1/4 acre emitter	abuts ND-7; same habitat	3
AJ	1/4 acre emitter	----	NA
BC	1-acre emitter	site crested wheatgrass, bordered by large patch of big sage	6
BE	1-acre emitter	heavily disturbed, burned site	NA
BJ	1-acre emitter	heavily disturbed, burned site	NA
<b>PHASE III</b>			
ND-4	No drop site	site dominated by big sage	5; 7; 8
ND-5	No drop site	entire site planted crested wheatgrass	NA
AA	1/4 acre emitter	entire site and ROW planted crested wheatgrass	NA
AB	1/4 acre emitter	----	NA
AC	1/4 acre emitter	site consists of cheat grass and crested wheatgrass	NA
AH	1/4 acre emitter	disturbed site	NA
AI	1/4 acre emitter	disturbed site surrounded by big sage	2; 7
AK	1/4 acre emitter	----	NA
AM	1/4 acre emitter	site is the boarder of large expanse of planted crested wheat and big sage	NA
AQ	1/4 acre emitter	site surrounded by large expanse of big sage	4



**Table 1**  
**Specific Mitigation for Phase II and Phase III Sites Included in the Mitigation Plan**

AT	1/4 acre emitter	site dominated by native shrub-steppe bunch grasses and shrubs	NA
AV	1/4 acre emitter	abuts ND-4; same habitat type	5
BA	1-acre emitter	disturbed site surrounded by big sage	6
BB	1-acre emitter	entire site planted crested wheatgrass	NA
BD	1-acre emitter	site surrounded by large expanse of big sage	4
BF	1-acre emitter	site dominated by crested wheatgrass	NA
BG	1-acre emitter	complete big sagebrush cover	6
BI	1-acre emitter	disturbed site, complete cover of planted crested wheatgrass	NA
BK	1-acre emitter	Missile Silo	NA

**Table 2**  
**Description of Generic Mitigation Measures**

Mitigation Measure Number	Generic Mitigation Measure
1	If unanticipated cultural discoveries are made during construction, construction activities will cease in the affected area and would not resume until instructed by the contracting officer. The contractor's representative will notify the Air Force environmental officer. The Air Force official would then notify a qualified permitted archeologist for a consultation. If the site is significant, e.g., human burial site, the archeologist would contact the State Historical Preservation Office (SHPO) for further consultation.
2	The contractor will have all personnel trained in the use of fire suppression equipment at construction sites.
3	All vehicles entering construction areas will carry fire extinguishers and shovels.
4	Contractors will minimize disturbance to native vegetation and use erosion control measures (e.g., water conveyance, energy dissipation structures) and sediment retention measures (e.g., basins, tarps, and barriers) to minimize exposure and movement of soil to reduce impacts resulting from wind or water erosion at construction sites. Thus, reducing the possibility of the establishment of undesirable non-native plants.
5	To reduce the establishment of undesirable non-native plants, the contractor will re-seed areas of exposed soil after construction with a seed mixture approved by Bureau of Land Management botanists.
6	To minimize disturbance to native vegetation the contractor will utilize existing roads in the rights-of way if present. The contractor will restrict all vehicle and construction equipment to existing roadways.
7	The contractor will restrict movement of construction equipment, staging areas, and materials storage to within the boundaries of the surveyed rights-of-ways. The contractor will not work outside the existing (ROW's).

**Table 3**  
**Description of Selective Mitigation Measures**

<b>Mitigation Measure Number</b>	<b>Selective Mitigation Measure</b>
1	The contractor will provide on-site monitoring of slickspot peppergrass and slick spot peppergrass habitat during construction; thus, insuring that the minimum amount of habitat is destroyed during construction. The number of slickspots and number of plants lost to placement of site facilities should be documented. In addition, the contractor should flag all sites which are on the periphery of the construction site to reduce construction impacts outside the ROW.
2	Construction activity prohibited from February 15 to June 30 to avoid disturbance of breeding/nesting/brooding sage grouse.
3	Construction activity prohibited from March 15 to May 31 to avoid sage grouse/wildlife disturbance
4	Construction activity prohibited from December 1 to May 31 31 to avoid sage grouse/wildlife disturbance
5	Construction activity prohibited from December 1 to June 30 31 to avoid sage grouse/wildlife disturbance
6	To avoid disturbance of wintering sage grouse, construction activity is prohibited from December 1 to February 15.
7	Maintain native habitat at no-drop sites. Where possible, situate facilities as to reduce destruction of native vegetation.
8	The contractor will affix bird spikes to buildings at ND-4 to discourage perching by raptors.

## SITE PHOTOGRAPHS



Photo 1 .Photograph of a slick spot (*Lepidium papilliferum* habitat) taken at the Industrial complex.

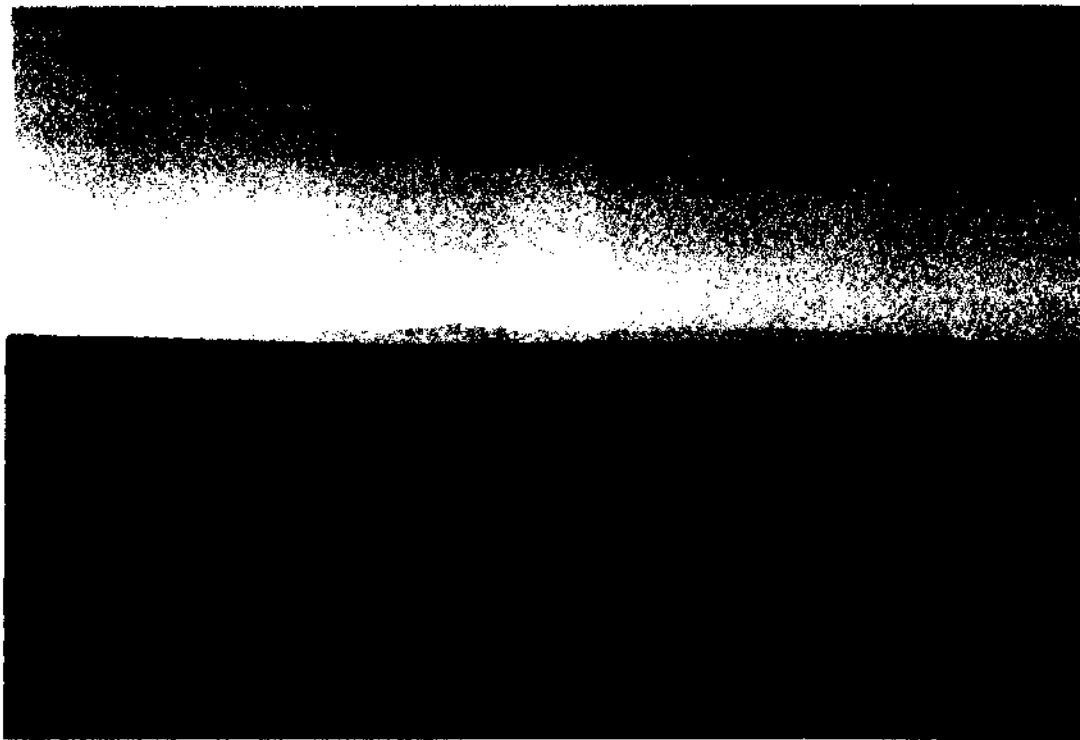


Photo 2. View of ND-7 looking south into adjacent large patch of sagebrush.

## SITE PHOTOGRAPHS

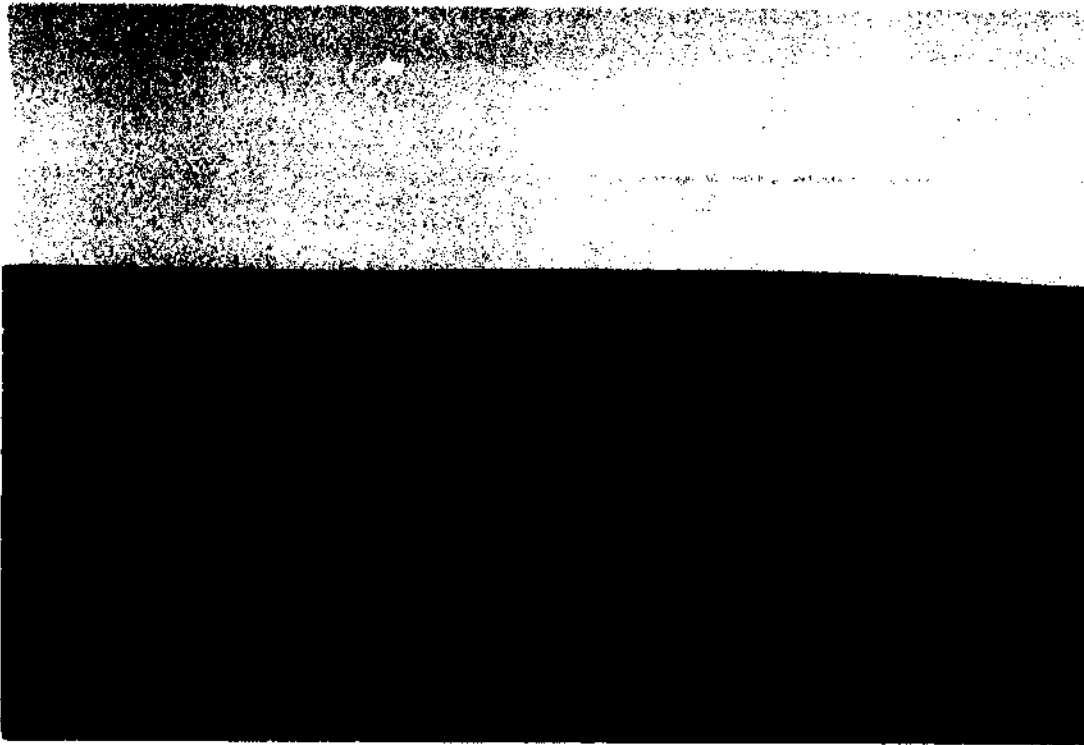


Photo 3. Photograph of AF looking down the ROW into the adjacent sagebrush patch.



Photo 4. View of BC looking southwest from the center of the site into the adjacent sagebrush patch.

## SITE PHOTOGRAPHS

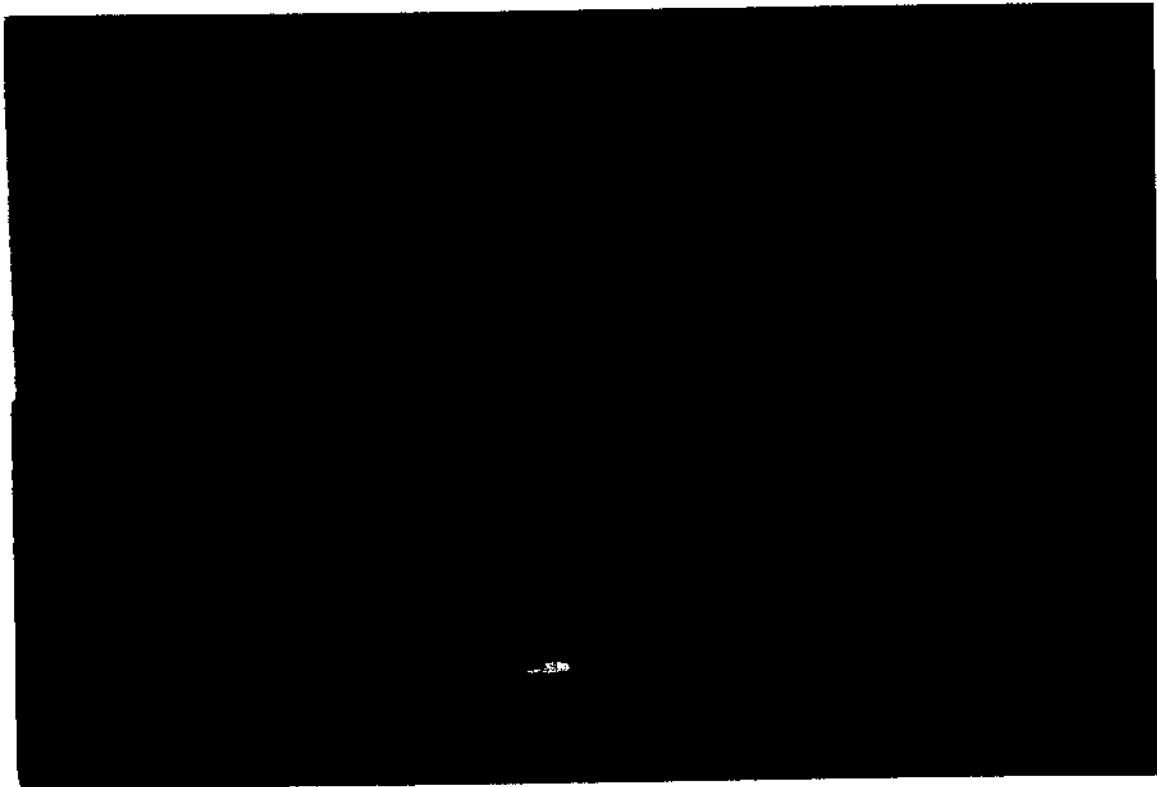


Photo 5. View of AV, looking down the ROW toward ND-4.

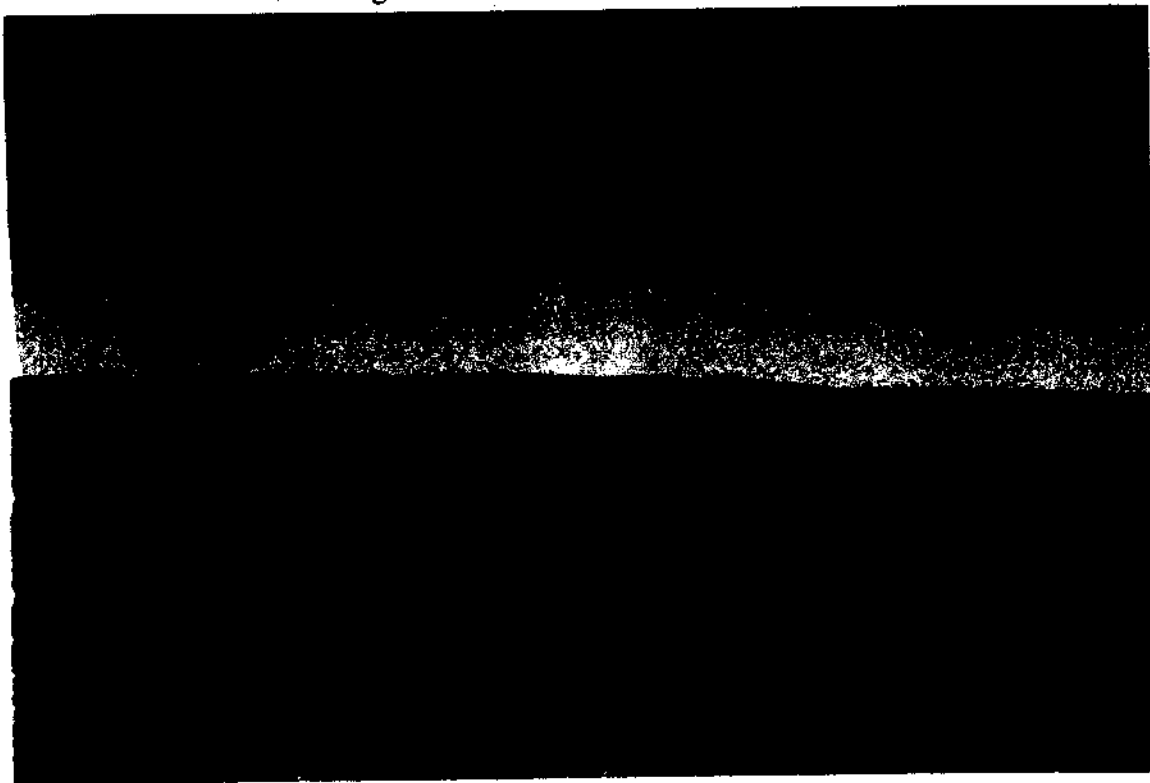


Photo 6. View of ND-4 showing larger sagebrush habitat.

## SITE PHOTOGRAPHS

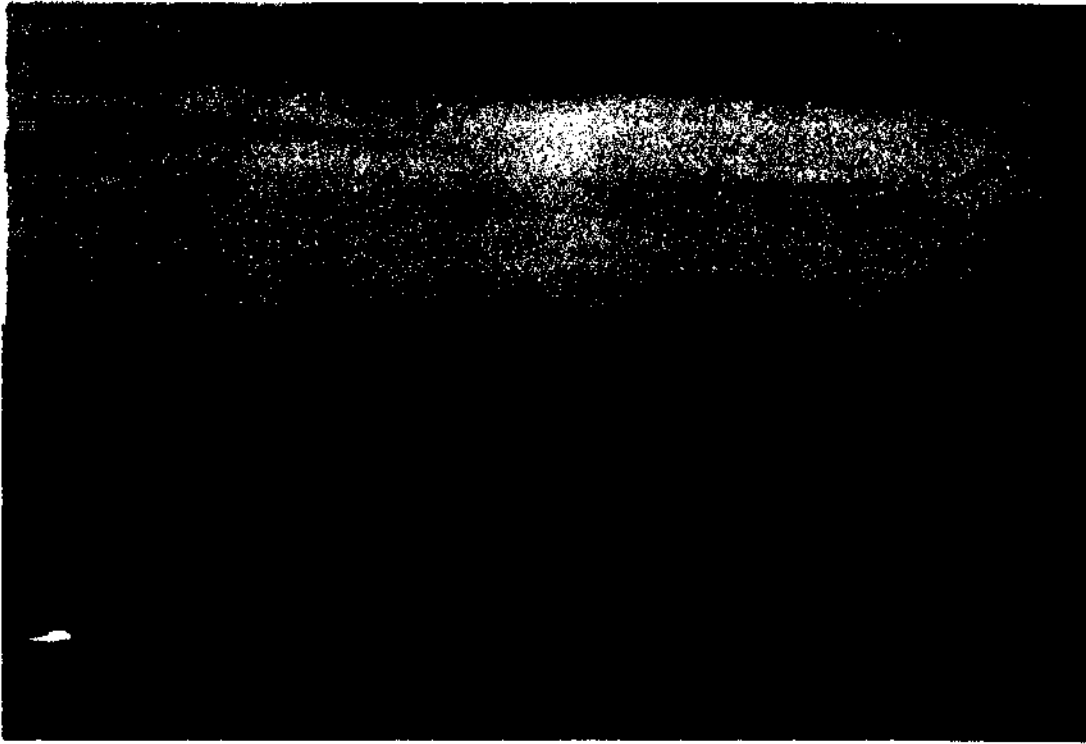


Photo 7. Photo taken from the center if AI looking toward the adjacent sagebrush steppe habitat.

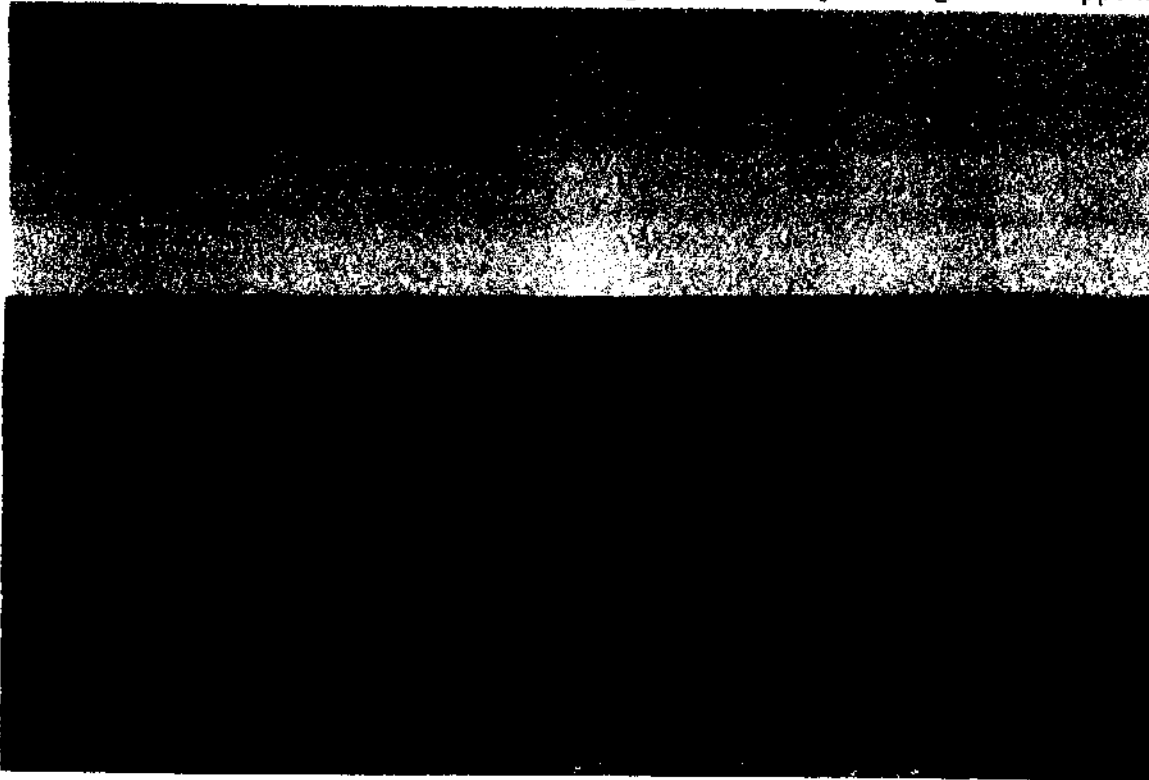


Photo 8. View of AQ and the surrounding habitat.

## SITE PHOTOGRAPHS



Photo 9. View of large sagebrush plants on the perimeter of BA.

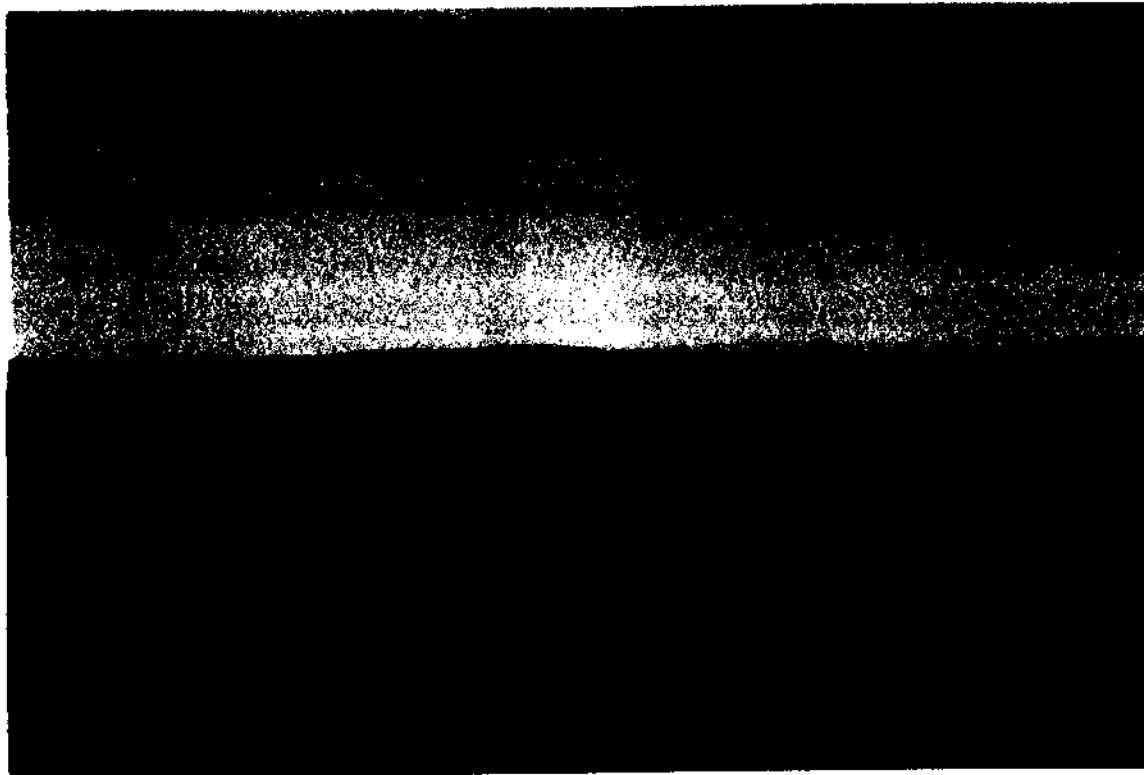


Photo 10. View of BD taken from the corner looking toward the expanse of sagebrush steppe surrounding the site.



## SITE PHOTOGRAPHS

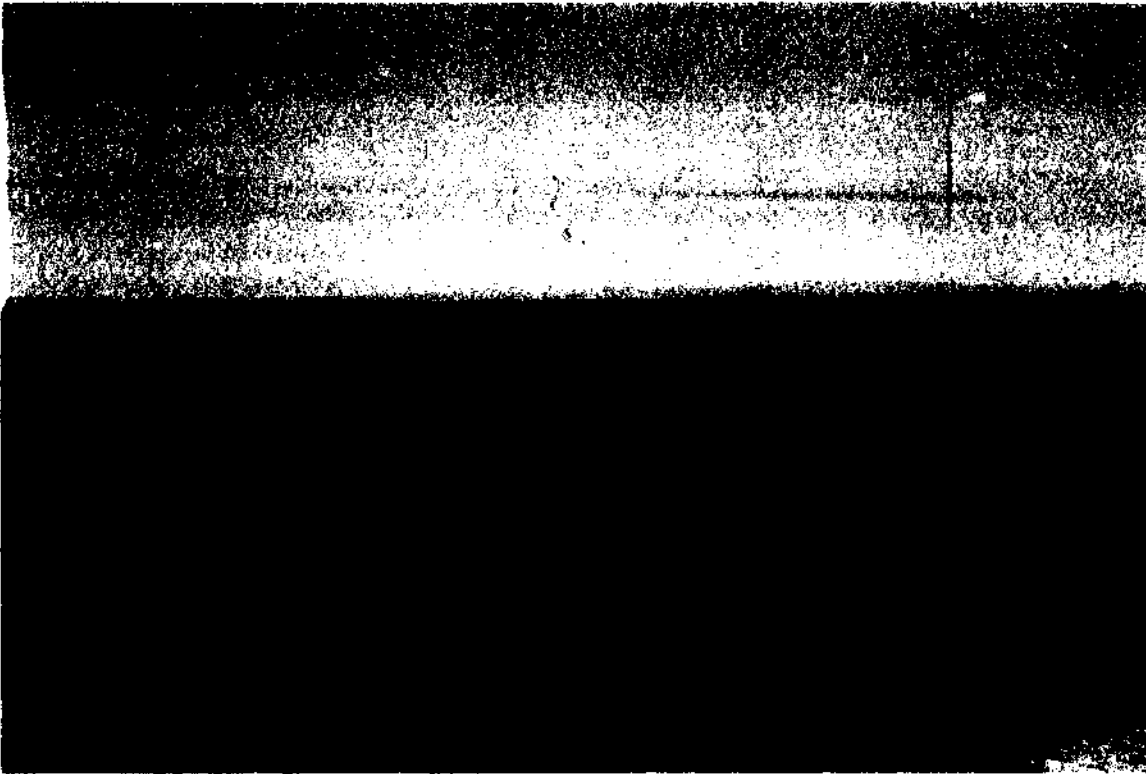


Photo 11. Photo of BG taken from the ROW looking toward the center of the site.

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## *APPENDIX 1. Bird Spike Information*

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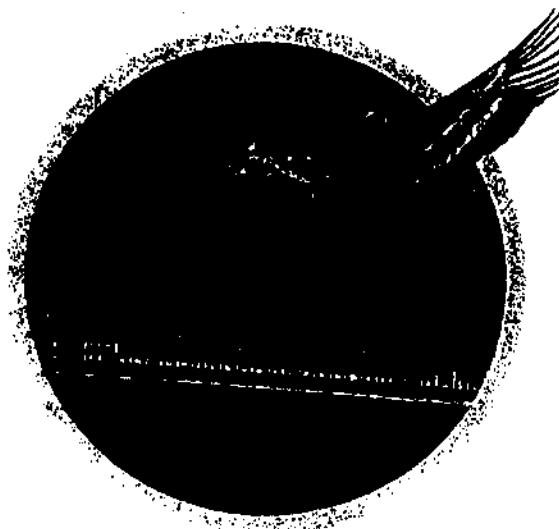
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Bird Control

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### Bird-X Spikes

Birds instinctively fly to "landing strips" such as roof ledges, windowsills, building projections, signs, statues, trusses and beams. But, now you can keep them from landing on your property... easily, inexpensively... and permanently.



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**SPIKES is dense.** Top branches protrude from the verticle shafts to give impenetrable coverage. No need to double up.

**SPIKES is flexible.** Mounts easily on flat, curved or irregular surfaces - whether wood, metal or masonry.

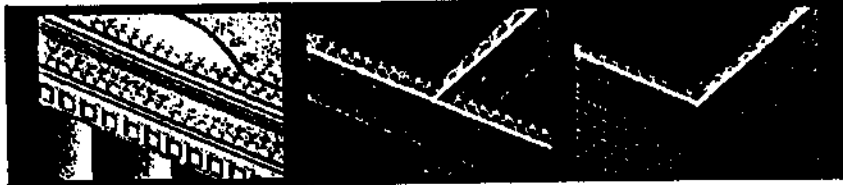
**SPIKES is easy to install.** Stackable 12" sections attach quickly with SPIKES Special Adhesive, nails, screws, wire ties, etc.

**SPIKES is environmentally safe and non-lethal.** Nothing to rust or deteriorate.

**SPIKES is economical.** Sturdy plastic does the same job a stainless steel at a fraction of the cost. One-foot modules minimize waste.

**SPIKES is great working with other BIRD-X products.** Combinations have proven more effective than any single product alone.

Use SPIKES in a variety of applications...



### Standard SPIKES, Model #SPK1 //

For most applications 4 1/2" x 4 1/2" x 1"

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For ledges 2 1/2" deep or less 4 1/2" x 2 1/4" x 1/2"

		100'	50'	25'	10'
#SPK1	Standard SPIKES,	\$395.00	\$220.00	\$120.00	\$45.0
#SPK2	Narrow SPIKES,	\$295.00	\$165.00	\$90.00	\$35.0

Bulk rate discounts:	1500'	-10%	CALL
	3000'	-15%	CALL
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#SSA SPIKES Special Adhesive, 10 oz cartridge \$8.00  
One cartridge will affix approximately 20 ft of SPIKES

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## Appendix 2. Slickspot Peppergrass (*Lepidium papilliferum*)

Slickspot peppergrass (*Lepidium papilliferum*) is a priority species. Habitat degradation and loss of the sagebrush steppe vegetation has made slickspot the most well documented declining species of any rare plant species in Idaho (Moseley 1994). A population occurs in a 75-acre area within the 12,000-acre training range concentrated in the Juniper Butte primary ordnance impact area. Slickspot peppergrass (*Lepidium papilliferum*) can occur on any of the Phase II or Phase III construction sites. Thus, contractors must become familiar with slick spot habitat identification and take appropriate measures to avoid it whenever possible.

Slickspot peppergrass grows on unique microsites within the sagebrush steppe ecosystem in Wyoming big sagebrush vegetation communities. These microsites are alternatively called slickspots, mini-playas, playettes, or natric sites. Slickspots are bare areas that temporarily pool water in the spring and contain soils that are significantly higher in sodium and clay content (Moseley 1994). Other plants do not colonize these sites due either to the nature of the soil itself (shrink-swell action and /or frost heaving) or the small scale flooding action that occurs in springtime (Moseley 1994).

High quality slickspots are easy to see, even to an untrained eye. They look like low places or slight depressions in the sagebrush landscape that are more or less devoid of other vegetation, or, as Moseley (1994) describes them, "visually distinct small-scale openings" in the sagebrush. Lower quality slickspots—those that are somewhat degraded—are less obvious due to colonization by other species, particularly weedy annuals, but can still be characterized by the lack of sagebrush and other perennial species, and by the slight depression. Areas that have been converted to annual grasslands or to a crested wheatgrass community still support slickspots that are inhabited by slickspot peppergrass, but these slickspots are usually the most difficult to see compared to slickspots found in intact sagebrush vegetation. Often, slickspots in these areas are overgrown with weedy annual plants such as tumbled mustard (*Sisymbrium altissimum*) and cheatgrass (*Bromus tectorum*) making them difficult, but not impossible, to locate.

### Literature Cited

Slickspots usually range in size from about 1 m<sup>2</sup> to less than 100 m<sup>2</sup> and are interspersed among the vegetation. In general, slickspot peppergrass does not occupy all available slickspots in any given area but is more likely to be found clustered over a smaller portion of the slickspots (Mancuso et al. 1998).

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